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FINAL BASE REALIGNMENT AND CLOSURE ENVIRONMENTAL SITE SCREENING REPORT STUDY AREA 17 NTC ORLANDO FL
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BASE REALIGNMENT AND CLOSURE ENVIRONMENTAL SITE SCREENING REPORT

STUDY AREA 17

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

UNIT IDENTIFICATION CODE: N65928
CONTRACT NO.: N62467-89-D-0317/107

MARCH 1999

SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
NORTH CHARLESTON, SOUTH CAROLINA
29418

BASE REALIGNMENT AND CLOSURE
ENVIRONMENTAL SITE SCREENING REPORT

STUDY AREA 17

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Unit Identification Code: N65928

Contract No.: N62467-89-D-0317/107

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March 1999

CERTIFICATION OF TECHNICAL
DATA CONFORMITY (MAY 1987)

The Contractor, Harding Lawson Associates, hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-89-D-0317/107 are complete and accurate and comply with all requirements of this contract.

DATE: March 2, 1999

NAME AND TITLE OF CERTIFYING OFFICIAL: John Kaiser
Task Order Manager

NAME AND TITLE OF CERTIFYING OFFICIAL: Richard Allen
Project Technical Lead

(DFAR 252.227-7036)

EXECUTIVE SUMMARY

Harding Lawson Associates (HLA), under contract to the Southern Division, Naval Facilities Engineering Command, has prepared this Site Screening Report for Study Area (SA) 17, located at the Naval Training Center in Orlando, Orange County, Florida. This report was prepared under the Comprehensive Long-term Environmental Action, Navy Contract No. N62467-89-D-0317 as Contract Task Order No. 107.

The objective of the site screening investigation was to locate and identify any compounds that may be present at concentrations exceeding screening criteria. The investigation required several phases to complete. During the initial episode of screening, the surface soils at the site were found to have concentrations of polynuclear aromatic hydrocarbons (PAHs) exceeding screening criteria. The investigation also demonstrated that the groundwater of the surficial aquifer had concentrations of chlorinated volatile organic compounds (VOCs) exceeding screening criteria. Accordingly, the Orlando Partnering Team requested supplemental screening investigations designed to (1) evaluate and characterize the PAHs in soil, and (2) evaluate and characterize the chlorinated VOCs in groundwater.

The field program to evaluate PAHs in soil involved the collection of surface soil samples from a grid placed around the original soil sampling location(s). The samples were analyzed on site using immunoassay testing techniques to determine the total PAH concentration. After the general contamination limits had been defined, confirmation samples were collected for off-site laboratory analysis. The results of the investigation permitted better definition of the limits of contamination and the specific PAH compounds present.

The supplemental groundwater evaluation involved two phases of fieldwork. The first phase involved the installation and sampling of monitoring wells in the immediate vicinity of the well where VOC exceedances were discovered. This work was implemented to determine whether the contamination was confined to the immediate area of the original well. The second phase was designed to delineate the plume and to evaluate the factors affecting plume migration. This was accomplished through the collection of groundwater screening samples throughout the surficial aquifer. The samples were collected using direct-push technology (DPT) and analyzed with an on-site field laboratory. Some of these samples were submitted to an off-site laboratory for confirmation. Permanent monitoring wells were installed and sampled to confirm the nature and extent of the plume. Surface water and sediment samples were also collected from the drainage canal on the south side of the site to determine whether the plume had migrated to that area. The migration assessment involved a lithologic characterization, hydraulic conductivity testing, and groundwater flow measurements.

The results of the groundwater evaluation suggest that the plume originated from at least two source areas located in the north-central part of the former motor pool compound. The plume extends east-southeast from the source areas in the direction of groundwater flow to a distance of approximately 250 feet downgradient. The highest VOC concentrations were detected at the source areas along the upper surface of a thin layer of less permeable sand and silt at a depth of 15 to 25 feet below land surface (bls). This layer and another somewhat deeper layer of silty sand act as aquitards that divide the surficial aquifer into three units – shallow, intermediate, and deep. The upper surface of these layers, as well as the shallowest clay within the Hawthorn Group sediments at the base of the surficial aquifer, act as accumulation points for the contaminants.

Analytical results of groundwater samples collected from permanent monitoring wells confirmed the results of the DPT groundwater screening program. The highest total chlorinated VOC concentration was 65,000 micrograms per liter ($\mu g/\ell$) in well OLD-17-24B, screened at 20 to 25 feet bls. Vertical migration of contaminants to the base of the surficial aquifer was confirmed with detections in samples collected at monitoring wells OLD-17-10C, OLD-17-20C, and OLD-17-22C. There were also detections in samples collected from monitoring wells OLD-17-25C and OLD-17-28C, which were screened below the clay that separates the surficial aquifer from the underlying Hawthorn Group. Chlorinated VOCs were detected in the surface water and sediment samples collected in the drainage canal along the southern boundary of SA 17.

HLA recommends that all of the surface and subsurface soil where PAH concentrations exceed screening criteria be excavated and removed for disposal off site. Because the intended reuse for this site is industrial, HLA recommends that industrial screening criteria be used to determine the volume of soil that is remediated. For the chlorinated VOC plume in groundwater, HLA recommends that a natural attenuation (NA) assessment be performed to evaluate whether or not NA is a viable remedial alternative. HLA also recommends that a Preliminary Risk Evaluation (PRE) be performed to determine the risk of exposure to contaminants in the drainage canal. The results of the NA assessment and the PRE should be used to determine the need for a Focused Feasibility Study.

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GLOSSARY

ABB-ES	ABB Environmental Services, Inc.
AST	aboveground storage tank
bls	below land surface
BTEX	benzene, toluene, ethylbenzene, and xylene
CLP	Contract Laboratory Program
CPT	cone penetrometer testing
DCE	dichloroethene
DPDO	Defense Property Disposal Office
DPT	direct-push technology
DQO	data quality objective
FDEP	Florida Department of Environmental Protection
FID	flame ionization detector
FFS	focused feasibility study
ft/day	feet per day
ft/ft	feet per foot
ft/min	feet per minute
ft/yr	feet per year
GC	gas chromatograph
GCTL	groundwater cleanup target level (Florida)
GPR	ground-penetrating radar
HLA	Harding Lawson Associates
HSA	hollow-stem auger
IA	immunoassay
IAS	initial assessment study
IRA	interim remedial action
MCL	maximum contaminant level
$\mu g/\ell$	micrograms per liter
$\mu g/kg$	micrograms per kilogram
mg/kg	milligrams per kilogram
NA	natural attenuation
NTC	Naval Training Center
OPT	Orlando Partnering Team
PAH	polynuclear aromatic hydrocarbon
ppm	parts per million
PRE	preliminary risk evaluation
PVC	polyvinyl chloride
RBC	risk-based concentration
RME	reasonable maximum exposure

GLOSSARY (Continued)

SA	Study Area
SCM	site conceptual model
SCTL	soil cleanup target level
SPT	standard penetration testing
TAL	target analyte list
TC	terrain conductivity
TCE	trichloroethene
TCL	target compound list
TRPH	total recoverable petroleum hydrocarbons
USCS	Unified Soil Classification System
USEPA	U.S. Environmental Protection Agency
UST	underground storage tank
VOC	volatile organic compound

1.0 STUDY AREA 17, DEFENSE PROPERTY DISPOSAL OFFICE, TRAINING MATERIALS STORAGE BUILDING (BUILDING 7178), MAINTENANCE OFFICE BUILDING (BUILDING 7190), INERT STORAGE WAREHOUSE BUILDING (BUILDING 7191), AND GENERAL WAREHOUSE BUILDING (BUILDING 7193)

1.1 INTRODUCTION AND OBJECTIVES. This report contains information regarding the environmental site screening activities at Study Area (SA) 17 located at the Naval Training Center (NTC) in Orlando, Orange County, Florida. The objectives of the screening activities were to identify and evaluate areas where environmental media may have been adversely affected by past site activities. Activities were focused on areas where current and/or historical land use may have posed a threat to the environment.

The initial site screening investigation was performed in 1995, and the results were reported in the *Site Screening Report, Group III, Naval Training Center, Orlando, Florida* (ABB Environmental Services, Inc. [ABB-ES], 1995a). Findings from the initial investigation indicated that there were exceedances of screening criteria for polynuclear aromatic hydrocarbons (PAHs) in soil and chlorinated volatile organic compounds (VOCs) in groundwater. Subsequently, the Orlando Partnering Team (OPT) requested that Harding Lawson Associates (HLA) perform supplemental investigations to evaluate the nature and extent of soil and groundwater contamination. The supplemental screening activities were performed during the period from January 1997 to August 1998.

This report is divided into five chapters. Chapter 1.0 provides the background and description of SA 17; Chapter 2.0 presents the activities and results of the initial screening investigation; Chapter 3.0 presents the activities and results of the PAH evaluation in surface soil; Chapter 4.0 presents the activities and results of the groundwater evaluation; and Chapter 5.0 presents the conclusions and recommendations.

1.2 BACKGROUND AND SITE CONDITIONS. SA 17 occupies approximately 25 acres in the central part of the McCoy Annex (Figure 1-1). The site includes Buildings 7178, 7191, 7193, and the adjacent area that formerly served as the Defense Property Disposal Office (DPDO) complex for the McCoy Annex (Figure 1-2). The site also includes Building 7190, the former Administration and Warehouse Building. The southwestern corner of the site is undeveloped. A shallow canal that drains to the east extends along the entire southern boundary of the site.

The following paragraphs provide a summary of the potential sources of contamination of the specific hazards associated with each area of the site. Potential sources may have been released due to spills or leaks associated with underground storage tanks (USTs), aboveground storage tanks (ASTs), or drum storage areas.

Building 7178. Constructed in 1965 as the Training Materials Storage Building, the 3,300-square-foot structure was most recently used for furniture and carpet storage. It has concrete block walls on a slab foundation. The asphalt pavement around the building is badly deteriorated and completely surrounded by a fence.

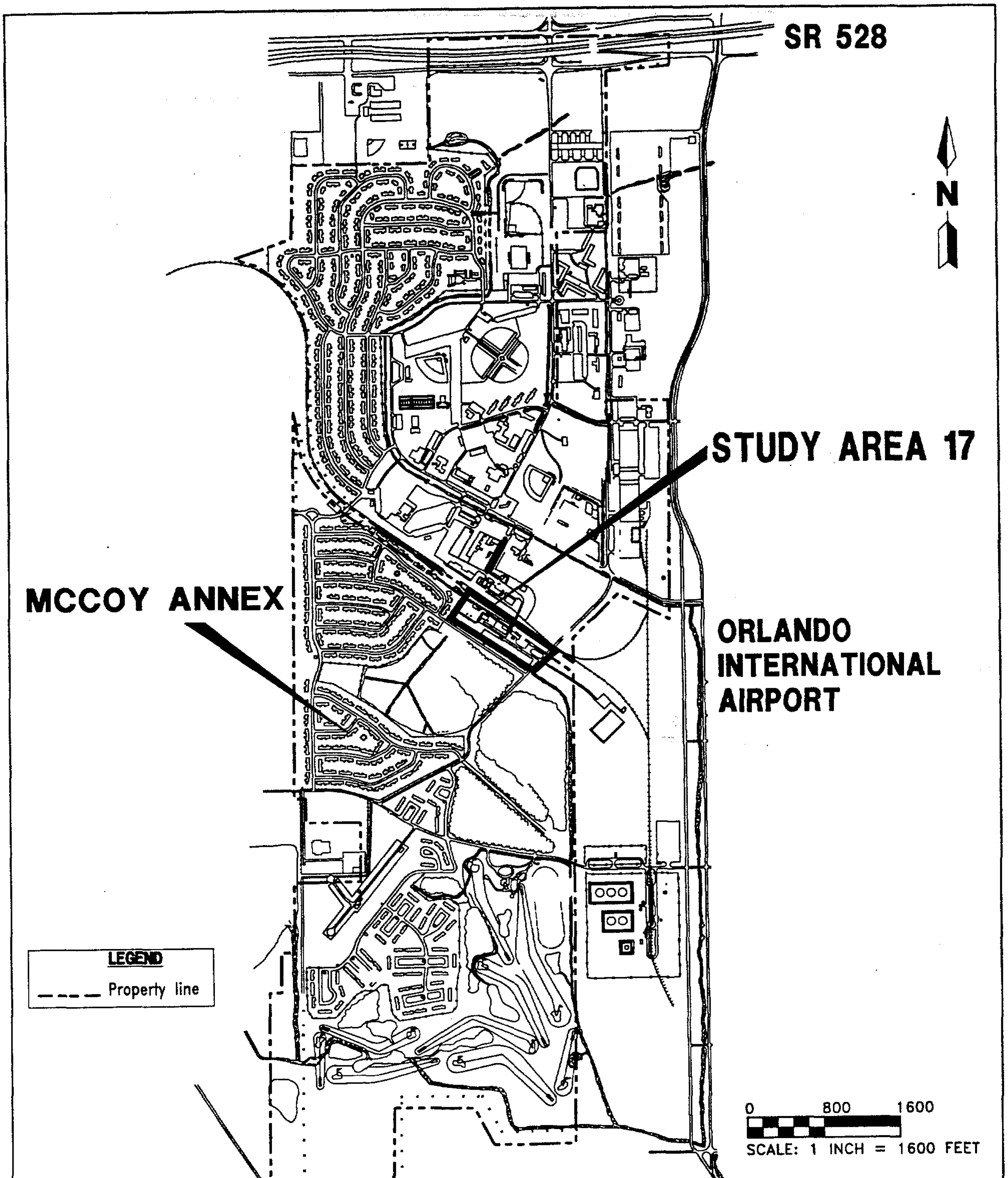

FIGURE 1-1
LOCATION OF STUDY AREA 17

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BRAC ENVIRONMENTAL SITE SCREENING REPORT STUDY AREA 17

NAVAL TRAINING CENTER ORLANDO, FLORIDA

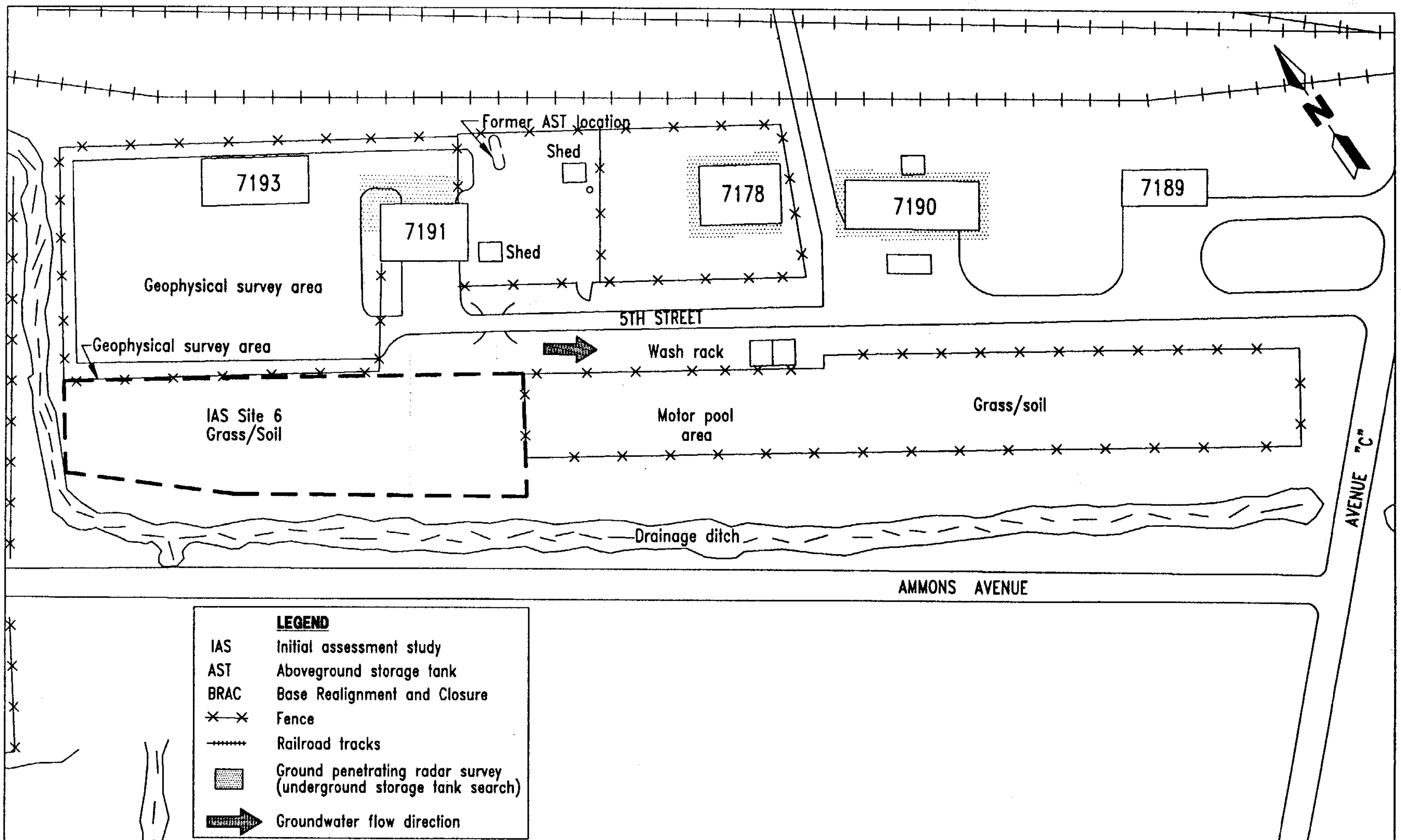

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FIGURE 1-2
PLAN MAP
STUDY AREA 17

SOUTHERN DIVISION NAVAL FACILITIES ENGINEERING COMMAND

BRAC ENVIRONMENTAL SITE SCREENING REPORT STUDY AREA 17

NAVAL TRAINING CENTER ORLANDO, FLORIDA

A shed has been added to the northwest wall of the building and was apparently used for the storage of drums and flammable and/or hazardous material. A 110-gallon AST used for the storage of heating oil was removed from Building 7178 in 1994 (ABB-ES, 1994).

Building 7190. Building 7190 was constructed in 1952 as an administrative building housing an Army Maintenance Office. The 3,000-square-foot building is a cinderblock structure which currently supports light automotive maintenance. The building contained a 550-gallon UST that was used for heating oil and was removed from the building in March 1993.

Associated with Building 7190 is a fenced compound which formerly served as the former motor pool area. The compound is unpaved and covered by gravel. The compound was most recently used by the lawn maintenance contractor for equipment storage and maintenance. During the Environmental Baseline Survey, several 55-gallon drums of waste fuel, oil, and ethylene glycol were observed on wooden pallets along the northern fenceline of the compound (ABB-ES, 1994). Hazardous materials (paints, oils, anti-freeze) were also reportedly stored here. These have since been removed. A vehicle wash rack is located just outside the north fence line of the storage area. The wash rack reportedly is connected to a leachfield located south of the wash rack inside the fenced storage yard (Fuller, 1998).

Building 7191. Building 7191 was constructed in 1955 and was most recently used for furniture storage. The 3,072-square-foot building is constructed of concrete block walls on a slab foundation. A 110-gallon UST (heating oil) was removed at some point in the past. The fenced, gravel lot between Buildings 7178 and 7191 was also used by the base lawn maintenance contractor to store equipment.

Building 7193. Building 7193, a 3,320-square-foot building constructed in 1959, is currently used for general storage and has a concrete slab floor with metal frame walls. The building is surrounded by a fenced, paved lot on three sides. According to earlier investigations (Initial Assessment Study [IAS], C.C. Johnson, 1985), a 110-gallon UST and a 250-gallon AST were located within the DPDO area. Electrical transformers and 55-gallon drums (contents unknown) may have been stored in this area (C.C. Johnson, 1985). The report also suggests that there had been releases due to leaking from 55-gallon drums.

The open area located to the immediate south of Building 7193 was designated IAS-6. The verification study was performed there in 1986 (Geraghty & Miller, 1986). Drums have been stored in this area as recently as March 1994.

2.0 INITIAL SITE SCREENING INVESTIGATION

The workplan for initial site screening was presented in the *Site Screening Plan, Groups I through V Study Areas and Miscellaneous Additional Sites, Naval Training Center, Orlando, Florida* (ABB-ES, 1995b). The fieldwork for the initial phase of screening was performed during the period from February through May 1995, and was reported in the (draft) Site Screening Report, Group III (ABB-ES, 1995a). The field activities for the initial site screening investigation are summarized below.

2.1 FIELD PROGRAM. The initial site screening field program consisted of the following activities:

- geophysical surveys,
- passive soil gas surveys in selected areas,
- soil sampling,
- sediment and surface water sampling, and
- monitoring well installation and groundwater sampling.

All activities performed during the investigation were conducted in a manner consistent with HLA's Project Operations Plan (ABB-ES, 1997a) developed specifically for work at NTC, Orlando.

2.1.1 Geophysics A geophysical survey was completed to locate buried objects that could pose a threat to the environment (e.g., buried drums, USTs). The survey involved the use of a magnetometer and time domain metal detector to locate metallic objects. Specific parameters measured were the vertical magnetic gradient and bulk terrain conductivity (TC) values. In addition, ground-penetrating radar (GPR) surveys were completed around the perimeters of buildings to identify potential USTs and to further characterize any magnetic and/or TC anomalies.

Prior to performing the survey, a grid coordinate system was established across the entire area to determine the relative location of any target anomalies to be cleared during the subsequent GPR survey. Following the survey, the grid coordinates at the location of each anomaly were noted, and the outline of the anomaly was marked on the ground surface by paint and/or pin flags for future reference.

2.1.2 Passive Soil Gas Survey A passive soil gas survey was performed to locate areas where VOCs or semivolatile organic compounds were present in the subsurface. Passive soil gas detections would help to focus subsequent soil and groundwater sampling efforts.

Passive soil gas samplers were installed at approximately 60 locations at SA 17, in the area between buildings 7191, 7178, 7190, and 7189 on the north and the drainage canal on the south. Samplers were installed in a grid with 50 feet of spacing between locations. Each sampler was equipped with two activated charcoal adsorption elements housed in a glass tube. The glass tube was placed upside down in a narrow borehole (approximately 1-1/2 inches in diameter) to a depth of 1 foot below land surface (bls). Following installation, the detectors were covered with a thin layer of soil or, in paved areas, with a thin layer of cement. Several time-calibration samplers were installed at locations within the survey area to measure the rate at which "loading" by volatile gases was occurring. These samplers were retrieved after 2 days and analyzed to determine the optimal period of time the other samplers should remain in place. The time-calibration results indicated that the samplers should remain deployed for a period of 7 days before retrieval.

During analysis, one of the charcoal elements was analyzed by thermal desorption and mass spectrometry to measure the ion count of substances detected. If compounds were detected, the second element was analyzed by thermal desorption and gas chromatography/mass spectrometry to identify the compound(s) causing the response.

Soil gas data are always semiqualitative, as multiple sources in soil and/or groundwater cannot be differentiated. Further, compound concentrations in each collector are compared on a relative basis, depending on whether or not the data are interpreted to be of high, moderate to high, moderate, etc., intensity. These qualitative soil gas values do not represent actual concentrations of the reported compounds. Efforts to relate soil gas response directly to groundwater or soil contaminant concentrations are generally not regarded as productive due to the assumptions that are required for heterogeneity and source distribution.

All sampling and analysis were performed in accordance with U.S. Environmental Protection Agency (USEPA) Level II data quality objectives (DQOs) (USEPA, 1993).

<u>2.1.3 Soil Sampling</u> Surface soil (collected from 0 to 2 foot bls) and/or subsurface soil (greater than 2 feet bls) samples were collected from 32 soil borings during initial screening. All soil samples were collected with a stainless-steel hand auger. Each soil boring was screened for the presence of organic vapors using a flame ionization detector (FID). A summary of the sampling locations is provided below. Unless otherwise noted, no FID deflections were noted during sampling.

2.1.3.1 **Surface Soil Sampling** One surface soil sample (17B00801) was collected from the centerline of a drainage swale south of Building 7190 to evaluate potential contamination associated with general site activities in the area surrounding the facility. Sample 17B01801 was collected from a hand-augered soil boring located near the northeast corner of the Building 7191. Sample 17B01901 was collected approximately 35 feet east of the northeast corner of Building 7191. This location is adjacent to the 500-gallon gasoline and diesel fuel AST on the site. A surface soil sample was collected at 6 to 18 inches bls. FID deflections of 2000 parts per million (ppm) and 10 ppm, respectively, were recorded when sampling these intervals.

Three surface samples were collected from the IAS-6 area. The samples were designated 17B02301, 17B02401, and 17B02501. No FID deflections were noted while collecting these samples.

Three surface soil samples (17B03401, 17B03501, and 17B03601) were also collected at runoff points between the south perimeter fence of the former motor pool complex and the drainage ditch. No FID deflections were noted while collecting these samples.

2.1.3.2 **Subsurface Soil Sampling** One subsurface soil sample (17B00701) was collected from a boring adjacent to a capped 2-inch-diameter steel pipe protruding from an area of disturbed soil 10 feet from the northwest wall of Building 7190.

Four subsurface soil samples were collected at Building 7178. Sample 17B00901 was collected from a boring adjacent to fuel pipes protruding from the northwest corner of the building. Sample 17B01001 was collected from a boring near the shed on the west side of the building. This shed was reported to have been a storage area for flammable materials. Sample 17B01101 was collected from a boring adjacent to a fuel pipe protruding from the wall near the northeast corner of the building. The fourth sample (17B00201) was collected from a soil boring advanced on the south side of Building 7178. All four samples were collected from the interval overlying the groundwater table, which varied from approximately 4 to 6 feet bls in this area at the time of the investigation.

One subsurface soil sample (17B01802) was collected from a boring placed near the northeast corner of Building 7191. The subsurface soil sample was collected from the interval overlying the groundwater table.

Three subsurface soil samples (17B02001, 17B02101, 17B02201) were collected from borings located south and west of Building 7193. Sample location 17B020 was sited adjacent to a 4-foot-by-10-foot area of replaced asphalt pavement, southwest of Building 7193. The second sample location (17B021) was sited in the vicinity of drum ring impressions formed in cracked asphalt pavement adjacent to the south side of Building 7193. The third sample (17B022) was sited in the grassy area between Buildings 7193 and 7191.

Three subsurface soil samples (17B02302, 17B02402, and 17B02502) were collected from IAS-6. All three samples were collected within the interval of 3 to 4 feet bls.

Six subsurface soil samples (17B01201 through 17B01701) were collected from the former motor pool area. Samples were collected from the interval overlying the groundwater table, at 3 to 4 feet bls.

Subsurface soil samples were also collected at each permanent and temporary well location (locations 17B001 through 17B005) (see Subsection 2.1.4). The samples were collected from the depth interval immediately overlying the groundwater table.

2.1.4 Monitoring Wells Installation and Groundwater Sampling Five shallow permanent monitoring wells were installed during the investigation. Monitoring well OLD-17-01A was installed approximately 20 feet south of the former AST location. Well OLD-17-02A was installed approximately 20 feet south of Building 7178. Monitoring wells OLD-17-03A and OLD-17-04A were installed inside the former motor pool compound, and OLD-17-05A was installed in the southeast corner of IAS-6, presumably downgradient of a geophysical anomaly. A temporary groundwater monitoring well (OLD-17-24T) was also installed at a location presumed to be downgradient of a second geophysical anomaly.

All of the permanent wells installed during the investigation were constructed with 2-inch-diameter polyvinyl chloride (PVC) riser and 0.010-inch slotted screen. The annulus between the walls of the soil boring and the well screen was filled with a 20/30 silica sand filter pack. The filter pack was sealed with a layer of bentonite, and the remainder of the annulus was filled with grout. The well was completed at the surface with a concrete pad, bolt-down vault, and locking cap. Following development and a period of stabilization, groundwater samples were collected from the new wells.

All of the field data sheets associated with monitoring well installation and sampling during the investigation, including the soil boring logs, well construction diagrams, the development and sampling data sheets, are provided in Appendix A.

2.1.5 Surface Water and Sediment Sampling Four surface water and sediment sample pairs were collected from the drainage ditch along the southwest and northwest perimeter of SA 17. One sample pair (17W026 and 17D026) was located upgradient of the site. The second sample pair (17W027 and 17D027) was collected downgradient of a geophysical anomaly identified in the south-central area of IAS-6 (C.C. Johnson, 1985). The third sample pair (17W028 and 17D028) was collected downgradient of the 5th Street vehicle wash rack. The fourth pair (17W029 and 17D029) was collected adjacent to the culvert at the intersection of Ammons Avenue and Avenue "C." Surface water was approximately 4 inches deep at location 17D026, 12 inches deep at location 17B027, 18 inches deep at location number 17B028, and 30 inches deep at location number 17D029. FID deflections were noted at locations 17D027 (25 ppm) and 17D028 (10 ppm) during sample collection.

Dense aquatic plants were at the water surface at each sample location. Sediment consisted of approximately 2 inches of dark brown to black organic muck, overlying silty fine sand.

All media samples collected during initial screening were submitted for total recoverable petroleum hydrocarbons (TRPH) and full suite Contract Laboratory Program (CLP) target compound list (TCL) and target analyte list (TAL) analyses in accordance with USEPA Level IV DQOs. In addition, all groundwater samples were analyzed for total suspended solids, sediment samples were analyzed for total organic carbon, and all surface water samples were submitted for TRPH and alkalinity analyses in addition to full suite CLP TCL and TAL analyses.

2.2 RESULTS. The results of the initial site screening investigation at SA 17 are discussed below. The analytical results of the surface and subsurface soil samples collected during the initial phase of site screening were evaluated by comparing the concentration of the various compounds detected to screening criteria, including basewide soil background screening levels, Florida Department of Environmental Protection's (FDEP's) soil cleanup target levels (SCTLs), and USEPA Region III risk-based concentrations (RBCs).

Groundwater analytical data are compared to background screening values, FDEP groundwater cleanup target levels (GCTLs), Federal maximum contaminant levels (MCLs), and USEPA Region III RBCs for tap water.

Analytical results from the surface soil, subsurface soil, groundwater, surface water, and sediment collected from SA 17 are presented as summary of detections tables in Appendix B. A complete set of analytical results for these media are presented in Appendix C. Exceedances of background screening or regulatory guidance concentrations are displayed in chemical boxes near their respective explorations on Figure 2-1 (and shaded in the Summary of Detections Tables, Appendix B).

<u>2.2.1 Geophysical Surveys</u> Geophysical surveys conducted around Buildings 7178, 7190, and 7191 did not reveal the presence of any USTs. Survey results at IAS-6, however, indicated the presence of a relatively large buried object(s). Six test pit excavations were placed throughout this area during a subsequent screening event. Buried construction debris, including lumber, metal fragments, and glass, were uncovered in the excavations. There was no evidence of buried drums in the area. Additional information regarding the methodology and results of the geophysical surveys is provided is Appendix D. A complete report of the methodology and results of the test-pitting operation are presented in Appendix E.

<u>2.2.2 Passive Soil Gas Surveys</u> All passive soil-gas collectors installed at SA 17 were below detection limits with the exception of one collector placed in the northwest corner of the soil gas survey grid south of Building 7193. The analytical results indicate very low-level detections of benzene and toluene (number SG-662). A complete report on the passive soil gas survey is provided in Appendix F.

<u>2.2.3 Surface Soil</u> Both inorganic and organic compounds were detected in the surface soil at concentrations exceeding screening criteria. The only compounds detected at concentrations that exceed the residential SCTLs or RBCs were arsenic and PAHs, including 2-methylnaphthalene, acenaphthene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, butylbenzylphthalate, chrysene, dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, and phenanthrene. Arsenic was only detected at one location exceeding its respective RBC or SCTL, at boring 17B023 at a concentration of 2 milligrams per kilogram (mg/kg). The PAHs were detected at only two boring locations at concentrations exceeding screening criteria, at 17B035 and 17B036. The highest PAH concentrations were detected at soil boring 17B035. Several PAH detections exceeded both residential and industrial RBCs, including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, carbazole, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, and phenanthrene. At location 17B036, benzo(a)pyrene and dibenz(a,h)anthracene exceeded their respective residential RBC but not industrial RBCs.

Several other inorganic compounds were detected at concentrations above background screening values, including arsenic, cadmium, calcium, copper, lead, manganese, mercury, silver, sodium, thallium, and zinc.

A summary of detections in surface soil analytical results is presented in Table B-1, Appendix B. The complete summary of soil analytical results is presented in Table C-1, Appendix C.

<u>2.2.4 Subsurface Soil</u> As with the surface soil, the only compounds detected in the subsurface soil samples at concentrations exceeding screening criteria were arsenic and PAHs. The PAHs were detected at concentrations exceeding screening criteria at locations 17B013, 17B016, and 17B025. At 17B013 and 17B016 the concentrations of benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene exceeded their respective residential RBCs. However, the only compounds detected at concentrations that

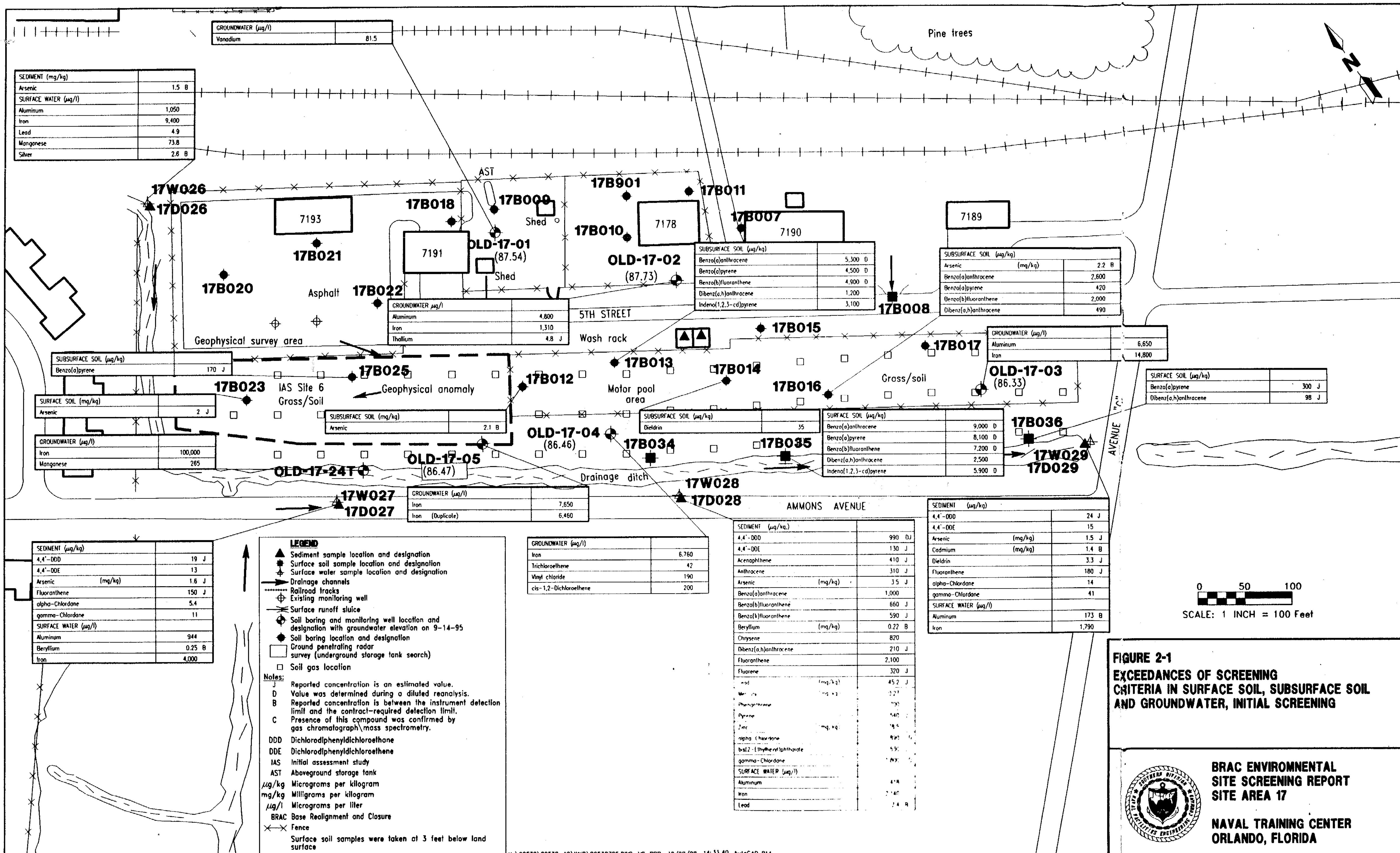

FIGURE 2-1
EXCEEDANCES OF SCREENING CRITERIA IN SURFACE SOIL, SUBSURFACE SOIL AND GROUNDWATER, INITIAL SCREENING

BRAC ENVIRONMENTAL SITE SCREENING REPORT SITE AREA 17

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exceed their respective industrial RBCs were benzo(a)pyrene and dibenz(a,h)-anthracene at 17B013. PAH compounds were also detected at locations 17B014 and 17B025, but the only exceedance of screening criteria was the benzo(a)pyrene detection at 17B025. The concentration exceeds its residential RBC.

Arsenic was detected at two locations at a concentration exceeding screening criteria - at 17B012 at 2.1 mg/kg and 17B016 at 2.2 mg/kg. Both of these concentrations exceed the residential RBC but not the industrial RBC. Other inorganic compounds, including aluminum, arsenic, barium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, nickel, potassium, sodium, thallium, vanadium, and zinc were detected above background screening values but below their respective RBC values.

A summary of the detections in subsurface soil is presented in Table B-2, Appendix B. The complete summary of soil analytical results is presented in Table C-1, Appendix C.

<u>2.2.5 Groundwater</u> The only compounds detected in the groundwater at concentrations that exceed screening criteria were the chlorinated VOCs and inorganics.

The chlorinated VOCs were detected only at monitoring well OLD-17-04A. The compounds that exceeded their respective GCTLs or MCLs were trichloroethene (TCE) at 42 micrograms per liter ($\mu g/\ell$), vinyl chloride at 190 $\mu g/\ell$, and cis-1,2-dichloroethene (DCE) at 200 $\mu g/\ell$.

The inorganic compound detections in groundwater which exceed background screening values include aluminum, iron, manganese, thallium and vanadium. The FDEP secondary standard and background screening values for aluminum were exceeded in two monitoring wells (OLD-17-02A and OLD-17-03A) whereas iron (also a secondary standard) was exceeded in all groundwater samples except 17G001. The vanadium concentration detected at OLD-17-01A at 81.5 $\mu g/\ell$ exceeds the screening criteria GCTL of 49 $\mu g/\ell$. The manganese concentration at well OLD-17-24T was 265 $\mu g/\ell$, exceeding Florida's secondary standard of 50 $\mu g/\ell$, and the tap water RBC of 180 $\mu g/\ell$. Thallium was detected at well OLD-17-02A at a concentration of 4.8 $\mu g/\ell$, which slightly exceeds the FDEP GCTL and Federal MCL of 2 $\mu g/\ell$, the tap water RBC of 2.9 $\mu g/\ell$, and background screening value of 3.8 $\mu g/\ell$.

A summary of the detections in groundwater is provided in Table B-3 of Appendix B. The complete summary of analytical results is presented in Table C-3 of Appendix C.

<u>2.2.6 Surface Water</u> The only exceedances of screening criteria detected in surface water samples were aluminum, iron, manganese, and zinc. Aluminum and iron screening values were exceeded in all surface water samples. Manganese exceeded its screening value at location 17W026, and likewise for zinc in 17W027.

A summary of the detections in surface water is presented in Table B-4 of Appendix B. The complete summary of analytical results is presented in Table C-4 of Appendix C.

<u>2.2.7 Sediment</u> Several compounds were detected in sediment samples at concentrations exceeding screening criteria, including PAHs, pesticides, and inorganics. Sample 17D02601 had only arsenic at a concentration exceeding screening criteria. Sample 17D02701 had exceedances of PAHs, pesticides, and

inorganics. Sample 17D02801 had exceedances of PAHs, pesticides, and inorganics. A summary of the detections in sediment is presented in Table B-5, Appendix B. The complete summary of analytical results is provided in Table C-5 of Appendix C.

3.0 EVALUATION OF POLYNUCLEAR AROMATIC HYDROCARBONS IN SOIL

The objective of the PAH evaluation was to gather additional soil analytical data to permit better characterization of the nature and extent of PAHs in soil. The field program is described in detail in a letter workplan dated December 20, 1996 (ABB-ES, 1996).

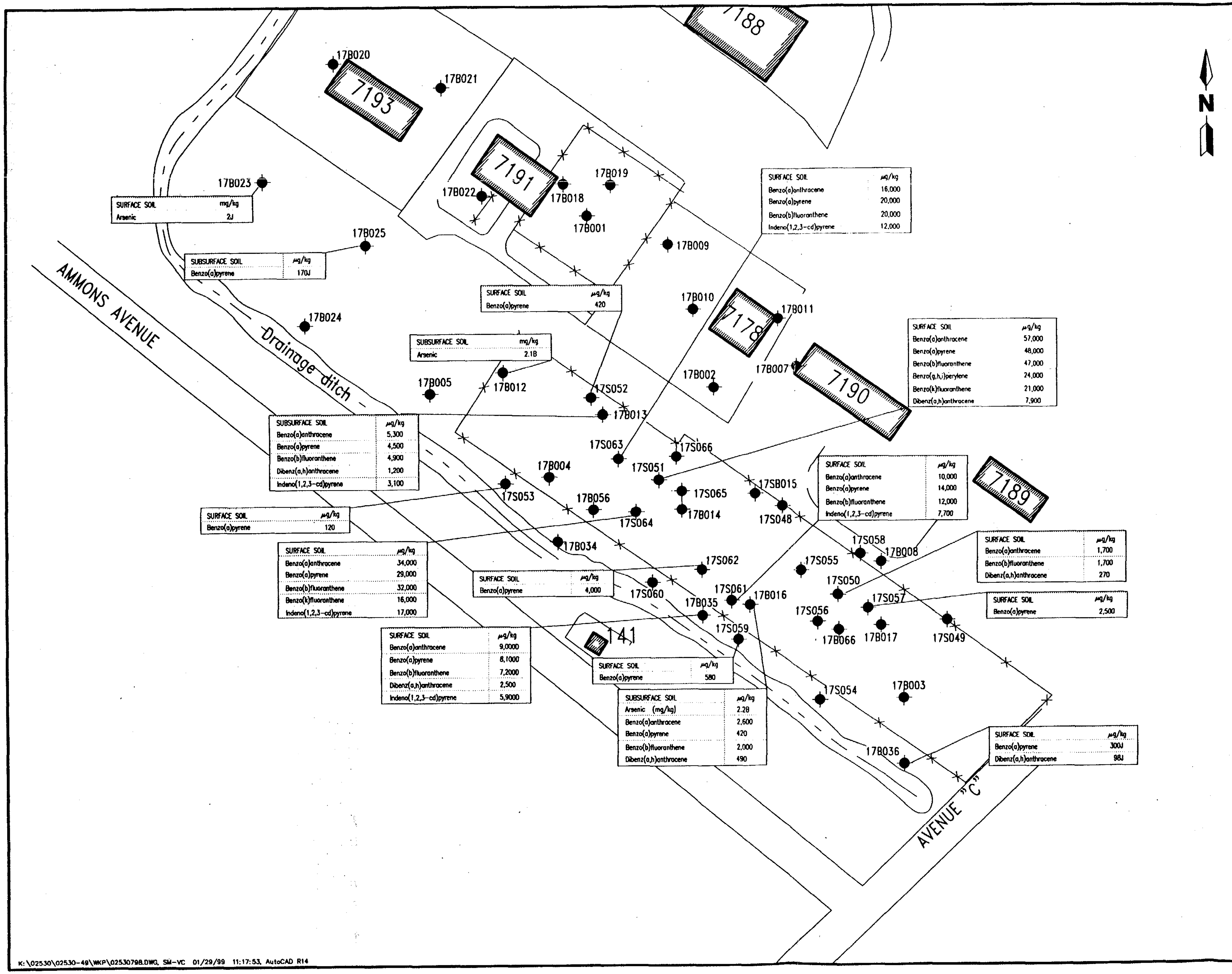
3.1 FIELD PROGRAM. The PAH evaluation was performed using a two-phase approach. During the first phase, soil samples were collected for field screening using immunoassay (IA) analysis techniques to allow for general delineation of the concentrations of PAHs in surface and subsurface soil. During the second phase, additional soil samples were collected for laboratory analysis to confirm the IA analyses. Delineation efforts were limited to the upper three feet of the subsurface. The field investigation was performed during the months of October and November, 1996.

The locations of all soil samples collected during the initial screening event and the subsequent PAH evaluation are shown on Figure 3-1. Also shown are the detections of all analytes exceeding the screening criteria for surface soil.

3.1.1 Field Screening Using IA Analysis During the first phase of the program, a grid coordinate system was established around the original soil sampling location (17B035) where the highest PAH concentrations were measured. Sample 17B03501 was collected from the area between the fence of the former motor pool yard and the drainage canal. Ten soil samples were collected from five points (designated 17S037/17B037 through 17S041/17B041) located approximately 25 feet to the west, north, and east of 17B035. Two samples were collected at each location - one from 0 to 1 foot bls ("S" designation) and one from 2-3 foot bls ("B" designation).

Each sample was analyzed using IA analysis. This technique provides a rapid, semiquantitative measurement of the total PAH concentration, but cannot distinguish between the types of PAH compounds present. Analysis is accomplished by first performing an extraction of the collected sample, then mixing the extracted fluid with an enzyme. The enzyme reacts with the PAHs present and, when the mixture is exposed to light, it displays an optical signature that varies inversely with the total PAH concentration. Through comparison of the optical density of standard samples with known PAH concentration to that of the test samples, a curve can be generated that correlates optical density to PAH concentration.

3.1.2 IA Testing Results The IA results on the first 10 samples indicated elevated PAH concentrations in one or both sampling intervals at the majority of the sampling locations. As a result, the grid was expanded another 50 feet to the west, north, and east, and samples were collected at six additional locations. The samples were designated 17S042/17B042 through 17S047/17B047 with sampling from the same two depth intervals - 0 to 1 foot bls and 2 to 3 foot bls. Each sample was analyzed using IA. As with the first five points, the results indicated that the total PAH concentration is elevated (in excess of 10,000 micrograms per kilogram [μg/kg]) for a distance of 75 feet from the original sampling point (17B035). The concentration is particularly high to the west and



LEGEND

17B011	Soil boring location and designation
B	Reported concentration is between the instrument detection limit and the contract-required detection limit
J	Reported concentration is an estimated value
D	Indicates value was determined during a diluted reanalysis
mg/kg	Milligrams per kilogram
µg/kg	Micrograms per kilogram
BRAC	Base Realignment and Closure
	Fence

0 50 100

SCALE: 1 INCH = 100 FEET

FIGURE 3-1
EXCEEDANCES OF SCREENING CRITERIA IN SOIL

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north of 17B035. A complete listing of the IA results on the soil samples is presented in Table 3-1.

A total PAH concentration of 1,800 μg/kg was used as a guidance concentration during the investigation to determine areas to expand the sampling grid. This concentration was derived by considering that benzo(a)pyrene is the PAH compound with the lowest regulatory guidance concentration with a residential RBC of 88 μg/kg. Each of the samples collected and analyzed during initial screening indicated that benzo(a)pyrene represented approximately 5 percent of the measured total PAH concentration. Assuming that ratio is consistent across the site, then a total PAH concentration of approximately 1,800 μg/kg would represent the threshold value where the regulatory limit would likely be exceeded. The only samples analyzed by IA which indicated a total PAH concentration less than 1,800 μg/kg were 17B037, 17B040, 17B041, and 17B042. The total PAH concentration is very high for a distance of at least 75 feet to the west and north, and decreases slightly to the east (sampling points 17S041/17B041 and 17S042/17B042).

3.2 CONFIRMATION SAMPLING. In order to confirm the IA testing results and to quantify the various PAH compounds present, soil samples were collected from selected locations for laboratory analysis. Confirmation sampling was performed during two events - one in November 1997 and the second in November 1998. During the first event, soil samples were collected from seven locations (designated 17S048/17B048 through 17S054/17B054), with two samples collected at each location. One sample was collected from 0 to 1 foot bls at all six sample locations ("S" designation), and the remainder ("B" designation) were collected from 2 to 3 foot bls. During the second event, 12 additional surface soil samples (17S055 through 17S066) were collected to further delineate hot spots, and to support preparation of a work plan for a potential interim remedial action (HLA, 1999). All of the confirmatory samples were submitted to an approved laboratory for analysis of PAHs using USEPA Test Method 3510/8270M, in accordance with USEPA Level IV DQOs.

3.3 CONFIRMATION RESULTS. Eight of the 26 confirmation samples submitted to the laboratory had PAH concentrations that exceed industrial screening criteria. Sample 17S05001 had detections of several compounds, but the only compounds that exceeded industrial screening criteria were benzo(a)pyrene (concentration of 1,700 μg/kg), benzo(b)fluoranthene (1,700 μg/kg), and dibenz(a,h)anthracene (270 μg/kg). At sample 17S05101, benzo(a)anthracene (concentration of 57,000 μg/kg), benzo(a)pyrene (48,000 μg/kg), benzo(b)fluoranthene (47,000 μg/kg), benzo(g,h,i)-perylene (24,000 μg/kg), benzo(k)fluoranthene (21,000 μg/kg), and dibenz(a,h)-anthracene (7,900 μg/kg) all exceeded screening criteria. Sample 17S05701 had a detection of benzo(a)pyrene at a concentration of 2,500 μg/kg. Sample 17S05901 had a detection of benzo(a)pyrene at a concentration of 580 μg/kg. Sample 17B06101 had detections of benzo(a)pyrene (14,000 μg/kg), benzo(a)anthracene (10,000 μg/kg), benzo(b)fluoranthene (12,000 μg/kg), and indeno(1,2,3-cd)pyrene (7,700 μg/kg). Sample 17B06201 had a detection of benzo(a)pyrene at a concentration of 4,000 μg/kg. Sample 17B06301 had detections of benzo(a)pyrene (20,000 μg/kg), benzo(a)anthracene (16,000 μg/kg), benzo(b)fluoranthene (20,000 μg/kg), and indeno(1,2,3-cd)pyrene (12,000 μg/kg). Sample 17B06401D had detections of benzo(a)pyrene (29,000 μg/kg), benzo(a)anthracene (34,000 μg/kg), benzo(b)fluoranthene (32,000 μg/kg), benzo(k)fluoranthene (16,000 μg/kg), and indeno(1,2,3-cd)pyrene (17,000 μg/kg).

Table 3-1
Polynuclear Aromatic Hydrocarbon Immunoassay Testing Results

Base Realignment and Closure
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Orlando, Florida

Sample Location	Sampling Interval (feet bls)	Immunoassay Results	
		Optical Density	Total PAH Concentration (µg/kg)
17S037	0 to 1	0.32	4,500
17B037	2 to 3	0.47	900
17S038	0 to 1	0.06	30,000
17B038	2 to 3	0.06	30,000
17S039	0 to 1	0.03	60,000
17B039	2 to 3	0.06	30,000
17S040	0 to 1	0.04	45,000
17B040	2 to 3	0.42	1,000
17S041	0 to 1	0.30	4,800
17S042	0 to 1	0.38	1,200
17B042	2 to 3	0.50	500
17S043	0 to 1	0.12	25,000
17B043	2 to 3	0.16	18,000
17S044	0 to 1	0.21	15,000
17B044	2 to 3	0.09	30,000
17S045	0 to 1	0.12	20,000
17B045	2 to 3	0.12	20,000
17S046	0 to 1	0.12	20,000
17B046	2 to 3	0.10	26,000
17S047	0 to 1	0.12	20,000
17B047	2 to 3	0.11	23,000

Notes: Immunological testing methods based on USEPA Methods SW846 and 4035.

bls = below land surface.
PAH = polynuclear aromatic hydrocarbon.
µg/kg = micrograms per kilogram.

A summary of the detections in surface and subsurface soil during confirmation sampling is presented on Figure 3-1, and Tables B-1 and B-2 of Appendix B. A complete summary of analytical results for these media is presented in Tables C-1 and C-2 of Appendix C.

4.0 GROUNDWATER EVALUATION

The supplemental groundwater screening investigation consisted of two phases. Following a resampling effort designed to confirm the chlorinated VOC exceedances at OLD-17-04A, the first phase was implemented to determine whether the plume was isolated to the immediate area of the well. When the Phase I results established that the plume did indeed extend over a significant area, the OPT requested that a more extensive field program be designed and implemented to determine the nature and extent of the groundwater plume. Phase II of the supplemental screening was performed in response to that request.

4.1 PHASE I FIELD PROGRAM. The Phase I field investigation was performed during the months of January and February 1997.

Five new monitoring wells were installed during the Phase I investigation. Four of the wells were installed as microwells using direct-push technology (DPT). These wells were designated OLD-17-06A through OLD-17-09A. The wells were placed in a cross pattern generally oriented east-west with OLD-17-04A located in the center. The four microwells were constructed with 3/4-inch-diameter PVC riser and 0.010-inch slotted screen. The screened section was pre-packed with a 20/30 silica sand filter pack. Nine feet of slotted screen was used for each well. A two-foot thick bentonite seal was placed above the filter pack, and the remainder of the borehole annulus was filled with grout. The microwells were completed at the surface with a concrete pad, bolt-down vault, and locking cap.

The fifth monitoring well, OLD-17-10C, was installed to test the quality of the groundwater at the base of the surficial aquifer in the immediate vicinity of OLD-17-04A. The well was constructed with 2-inch-diameter PVC riser and 0.010-inch slotted screen. The boring around the well screen was filled with a 20/30 silica sand filter pack. The filter pack was sealed with a layer of bentonite, and the borehole annulus was grouted to the surface. The well was completed at the surface with a concrete pad, bolt-down vault, and locking cap.

Following development and a period of stabilization, groundwater samples were collected from the five new wells and OLD-17-04A. The samples were submitted to an approved, off-site laboratory for analysis of VOCs using USEPA Test Method 524.2. All of the field data sheets associated with monitoring well installation and sampling during the Phase I supplemental work, including the soil boring logs, well construction diagrams, and the development and sampling data sheets, are provided in Appendix A.

4.2 PHASE I RESULTS. Chlorinated VOCs were detected in the groundwater samples collected from all five of the newly installed monitoring wells. A summary of the detections in groundwater is provided in Table B-3, Appendix B, and depicted on Figure 4-1. The complete summary of analytical results is presented in Table C-3 of Appendix C.

Vinyl chloride was detected at concentrations that exceed GCTLs in the samples collected at all six well locations. The concentration of vinyl chloride ranged from 1.4 $\mu g/\ell$ in the sample collected from OLD-17-10C (17G01001) to 450 $\mu g/\ell$ in the sample at OLD-17-04A (17G00403). The only other compound detected in all six

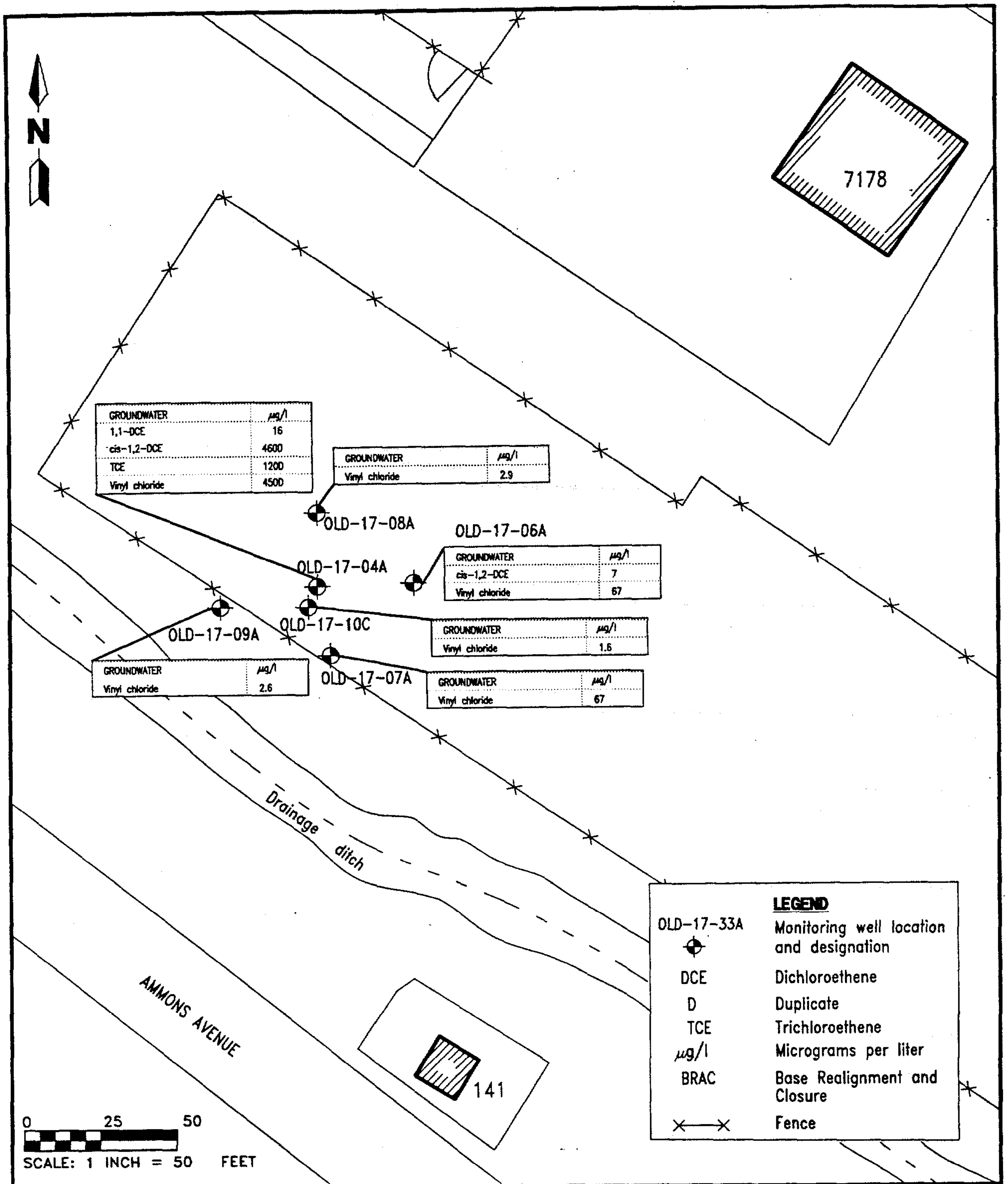

FIGURE 4-1
EXCEEDANCES OF SCREENING CRITERIA IN GROUNDWATER EVALUATION, PHASE I

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samples was cis-1,2-DCE. The concentration ranged from 3.4 $\mu g/\ell$ at OLD-17-10C to 460 $\mu g/\ell$ at OLD-17-04A. Only the sample from OLD-17-04A had a concentration of cis-1,2-DCE that exceeded the GCTLs. TCE was detected in only two samples - at 120 $\mu g/\ell$ in 17G00403 and at 2.3 $\mu g/\ell$ in 17G01001. The sample from OLD-17-04A was the only sample where the concentration of TCE exceeded regulatory criteria. The only other compounds detected were 1,1-DCE and trans-1,2-DCE in 17G00403, at concentrations of 16 and 6.9 $\mu g/\ell$, respectively. Only 1,1-DCE was detected at a concentration that exceeds the GCTL. A summary of the detections in groundwater is presented in Table B-3 of Appendix B. The complete summary of analytical results is provided in Table C-3 of Appendix C.

The results of the Phase I investigation demonstrated that the plume of chlorinated VOCs extended laterally for a distance of at least 25 feet in all directions from OLD-17-04A, and that the plume had migrated vertically to a depth of at least 65 feet bls.

4.3 PHASE II SCREENING PROGRAM. The objective of the Phase II field program was to collect the additional data necessary to better define the areal limits of the chlorinated VOC plume. This was to be accomplished in accordance with a workplan submitted in March 1997 (ABB-ES, 1997b), and involved an extensive groundwater screening program using DPT and an on-site field analytical laboratory. The screening program was to be followed by the installation of permanent monitoring-well clusters to confirm the screening results. Soil samples were also collected from potential source release areas, and surface water and sediment samples were collected from the drainage canal. The investigation also involved an evaluation of the groundwater flow properties.

4.3.1 Cone Penetrometer Testing (CPT) Phase II of the groundwater evaluation began with CPT to characterize the subsurface lithology across the site, and to target areas for groundwater sample collection. This type of testing is performed with DPT and utilizes hydraulics to advance a piezocone, which is a device to measure lithologic parameters. Resistance to penetration at the piezocone tip and at the outer surface of the sleeve is recorded. Subsurface pore pressure is monitored with a pressure transducer. These measurements are recorded by a field computer, and the data are compared to empirically derived measurements or parameters characteristic of different soil types. Piezocone data provides soil classifications consistent with the Unified Soil Classification System (USCS).

CPT was performed at four locations (17Q003, 17Q005, 17Q008, and 17Q011) initially, but additional tests were performed at five more locations (17Q016, 17Q018, 17Q020, 17Q022, and 17Q024) as the investigation area expanded (Figure 4-2). Each CPT exploration was advanced to at least the top of the shallowest clay unit within the Hawthorn Group because that horizon typically marks the base of the surficial aquifer.

The DPT rig was also utilized to install six piezometers (designated 17PZ01 through 17PZ06) at three locations on the south side of the drainage canal (Figure 4-2). Each cluster consisted of a shallow and a deep piezometer.

The shallow piezometers were constructed with 10 feet of screen bracketing the water table. The deep piezometers were constructed with 5 feet of screen located

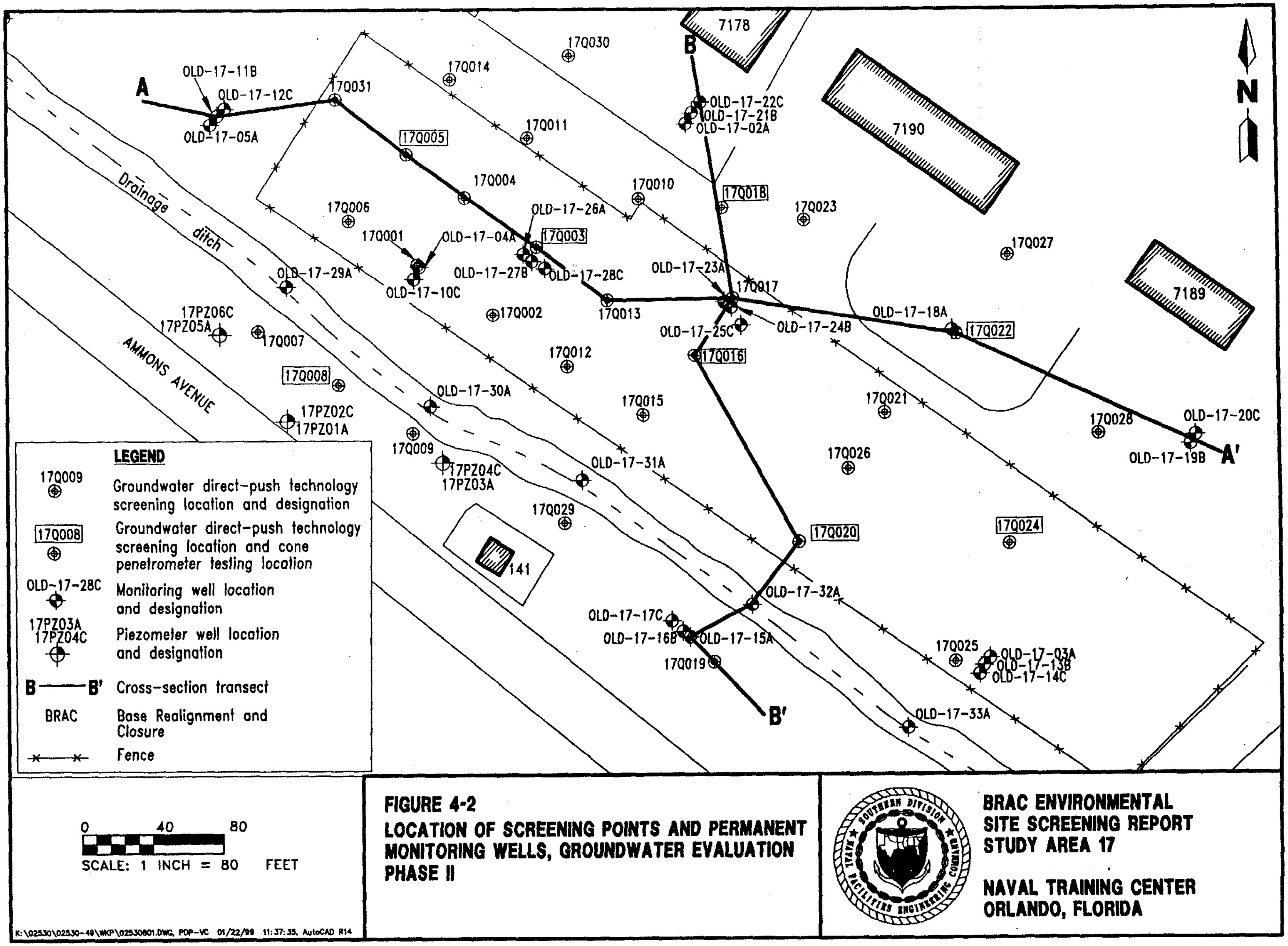

FIGURE 4-2
LOCATION OF SCREENING POINTS AND PERMANENT MONITORING WELLS, GROUNDWATER EVALUATION PHASE II

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at the base of the surficial aquifer. All of the piezometers were constructed of 3/4-inch-diameter PVC.

4.3.2 Groundwater Screening The first nine DPT explorations (designated 17Q001 through 17Q009) were placed within an arbitrary grid on (nominal) 50-foot centers around monitoring well OLD-17-04A. The grid was eventually expanded eastward and southward because of the configuration of the plume. A total of 185 groundwater samples were collected from 31 DPT explorations (designated 17Q001 through 17Q031) during the investigation (Figure 4-2). At the majority of the DPT explorations, groundwater samples were collected at a 5-foot interval to a depth of 30 feet bls, and at a 10-foot interval from 30 feet to 60 feet bls. At the remainder of the DPT locations, the sampling interval was 10 feet throughout the length of the exploration. The majority of the groundwater sampling points are located within the fenced compound. Several explorations (17Q007 through 17Q009, 17Q019, and 17Q029) were placed south of the drainage canal, and explorations 17Q010, 17Q011, 17Q014, 17Q018, 17Q022, 17Q023, 17Q027 17Q028, and 17Q031 were placed in the area between the former motor pool compound and Buildings 7178, 7190, and 7189.

The field analytical methods used were based on standard USEPA Methods SW-846, 5030 (purge and trap preparation), 8000A (GC calibration), and 8010A (halogenated VOCs). In addition to the chlorinated VOCs (tetrachloroethane, TCE, 1,1-DCE, trans-1,2-DCE, cis-1,2-DCE, and vinyl chloride), samples were also analyzed for four petroleum hydrocarbon VOCs (benzene, toluene, ethylbenzene, and xylene [BTEX]).

On-site Laboratory Quality Control. Quality control criteria for the on-site analytical methods were established to monitor method performance. An initial three-point calibration for quantification (low-, mid-, and high-range concentrations) was performed for each instrument. Instrument stabilities were monitored every 24 hours with a calibration standard at the mid-range concentration. The quantification performance criterion for operation was the agreement of the check standard with the three-point calibration curve to within 30 percent. Field samples were to be analyzed only if no more than one compound per detector in the check standard exceeded these criteria. If the check standard did not meet this criterion, then a second check standard was analyzed. If this second check failed to meet the criterion, then a new calibration curve was prepared. The identities of the target compounds were based on comparison with the retention times for the standards. Retention time windows of plus or minus three percent were established, based on the most recent calibration curve. In some instances, the peak was so broad that a three percent retention time window was not adequate, and operator judgement was applied.

Periodic method blanks comprised of deionized water were analyzed to confirm that no target compounds were introduced during sample handling and analysis. The method blank criterion was met if no target compounds were present above the reporting limit for the instrument. A surrogate solution containing bromofluorobromine was injected into each sample at a known concentration to determine percentage recoveries. The recovery range of 50 to 150 percent was established for water samples, and the recovery range of 30 to 170 percent was established for soil samples as one of the operating criteria for on-site analysis. Approximately 20 percent of the samples were submitted to an off-site laboratory to check precision and accuracy of the on-site analytical procedure. Off-site samples were analyzed for the same VOCs using USEPA Test Method 524.2.

4.3.3 Soil Screening Soil screening was performed to determine the presence of VOCs in soil. Soil screening was concentrated at two areas where the highest VOC concentrations were detected at the water table, for these areas could represent surface release points. Soil samples were collected on 50-foot centers within two grids centered on the "hot spots." Nine soil borings (designated 17B055 through 17B063) were established in one area, and 11 borings (17B064 through 17B074) were advanced in the second area. Soil samples were collected from the two-foot interval immediately above the water table.

Each soil sample was analyzed on site for the presence of organic vapors using a flame ionization detector (FID). This was accomplished by first placing the sample in a glass container and immediately sealing the container. After allowing the sample to equilibrate for a period not exceeding 15 minutes, the container lid was punctured and an FID was inserted through the lid to measure the concentration of any organic vapor in the headspace of the container. Each sample was first analyzed without a methane filter over the inlet of the FID to get a reading of the total organic vapor concentration present. Then, the filter was added to remove any vapor present excluding methane, and a second reading was taken. The difference in the two readings can then be attributed to the concentration of hydrocarbon vapors present in the sample.

Two soil samples (17B05501 and 17B06601) were submitted to an off-site laboratory for confirmation analysis using USEPA Test Method 8010. The selected samples were collected from the locations with the highest hydrocarbon vapor concentration from each source during the headspace testing survey.

4.4 PHASE II SCREENING RESULTS. The results of the screening part of the Phase II program are presented below.

4.4.1 Cone Penetrometer Testing CPT surveys were performed at selected DPT explorations. The CPT results allowed HLA to determine the local lithology of the site to a depth of 65 feet bls across most of the site. The upper 65 feet of the subsurface is comprised of variable percentages of unconsolidated clay, silt, and sand. The upper 30 feet consists primarily of fine sand with the exception of two thin (approximately 5 to 10 feet), discontinuous layers of silty sand. The upper surface of the shallowest silty sand layer was encountered from 10 to 15 feet bls on the west side of the former motor pool area. The silty sand layer dips slightly to the east and northeast and is interpreted to be approximately the same thickness throughout the area. The lower silty sand layer is continuous beneath the site at a depth ranging from 25 to 30 feet bls. This layer thins slightly to the north and east within the investigation area.

Below the deeper layer of silty sand, there is a layer of fine- to coarse-grained sand that extends from 30 to 50 feet bls. The upper surface of this sand marks the top of the Hawthorn Group sediments. Beneath this upper Hawthorn sand layer is a silty sand layer that extends from 50 to 55 feet bls, and it is everywhere underlain by an approximately 10-foot-thick section of sandy, silty clay. The percentage of clay in this unit is variable across the site and generally decreases to the north and east. The top of the clay marks the base of the surficial aquifer, and is underlain by a layer of fine- to coarse-grained sand 5 to 8 feet in thickness.

The two silty sand layers in the upper 30 feet of the surficial aquifer effectively divide the aquifer into shallow, intermediate and deep units. The section between the water table and the shallower of the two silty sand layers is the shallow unit; the section between the two silty sand layers is the intermediate unit, and the section between the lower silty sand and the Hawthorn Group clay is the deep unit.

A complete report of the CPT survey results are presented in Appendix G.

<u>4.4.2 Groundwater Screening</u> The groundwater screening results indicate that the plume of chlorinated VOCs encompasses an area measuring approximately 150,000 square feet, or approximately 3 acres. The geometry of the plume is best demonstrated by plotting the total VOC concentration measured at three key depth intervals: 5 to 10 feet bls near the water table, in the intermediate range of the surficial aquifer (15 to 20 feet bls), and at the base of the surficial aquifer (35 to 40 foot bls). These data are presented in contour plots for the three intervals as Figures 4-3, 4-4, and 4-5 respectively. The groundwater plume is contained within the boundary of SA 17. The highest concentrations of chlorinated VOCs detected at the water table are found at screening points 17Q002 and 17Q003 and at 17Q017, suggesting that these areas may represent release points of the contaminants to the environment. The total VOC concentrations at 17Q002 and 17Q003 are in the range of 3,000 to 5,000 $\mu g/\ell$. At 17Q017, TCE was detected at a concentration of 61,000 $\mu g/\ell$. The VOC concentrations along the water table decrease gradually southeastward.

Samples collected from the water table south of the drainage canal at 17Q007, 17Q008, and 17Q009 had no detections of chlorinated VOCs. The highest VOC concentrations were detected in the shallow and intermediate depth units of the surficial aquifer under both source areas. At screening points 17Q002 and 17Q003, the total concentration of chlorinated compounds ranged from 5,000 to 10,000 $\mu g/\ell$. At 17Q017, the concentration of every VOC was at least 1,000 $\mu g/\ell$ at the intermediate depth interval, and the concentration of TCE was 84,000 $\mu g/\ell$. VOCs were detected over a wider area at this interval, with detections at screening point 17Q030 to the northwest, 17Q001 in the southwest, and 17Q020 and 17Q026 to the east.

VOC concentrations decreased significantly in the deep unit of the surficial aquifer. The total VOC concentration detected in samples collected in the deep unit in the western source area ranged from 10 to 50 $\mu g/\ell$. The total VOC concentration at that interval in the eastern source area (at 17Q017) ranged from 50 to 100 $\mu g/\ell$. The highest VOC concentrations were detected in samples collected immediately below the deeper silty sand layer (at the 35- to 40-foot bls interval), and the concentrations decreased with depth. Contaminated groundwater at this depth covers a wider area than the interval above the shallow silty sand layer. Detections were measured in samples collected at this depth at screening point 17Q030, in the northwest part of the grid, to 17Q001 in the southwest, and to points 17Q020 and 17Q026 in the east. VOCs were also detected at this interval at screening points 17Q022 and 17Q028 along the northeast corner of the screening grid.

Contaminated groundwater was also detected below the shallowest clay in the Hawthorn Group in both source areas. In the sample collected from the depth interval of 55 to 60 feet bls at 17Q003, total VOC concentrations were from 15 to 20 $\mu g/\ell$. At 17Q017, total VOCs in the sample collected from the same depth

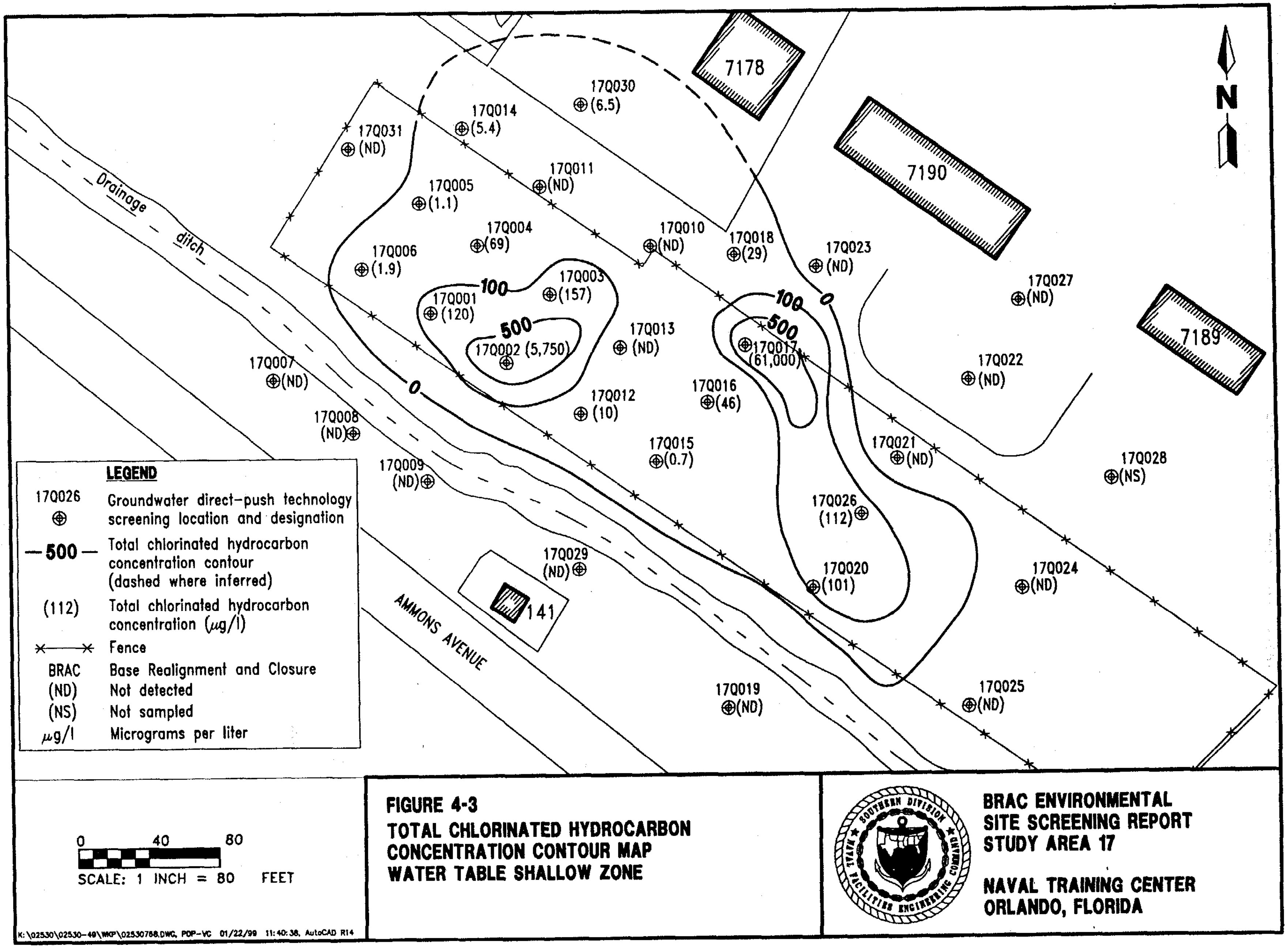

FIGURE 4-3
TOTAL CHLORINATED HYDROCARBON CONCENTRATION CONTOUR MAP WATER TABLE SHALLOW ZONE

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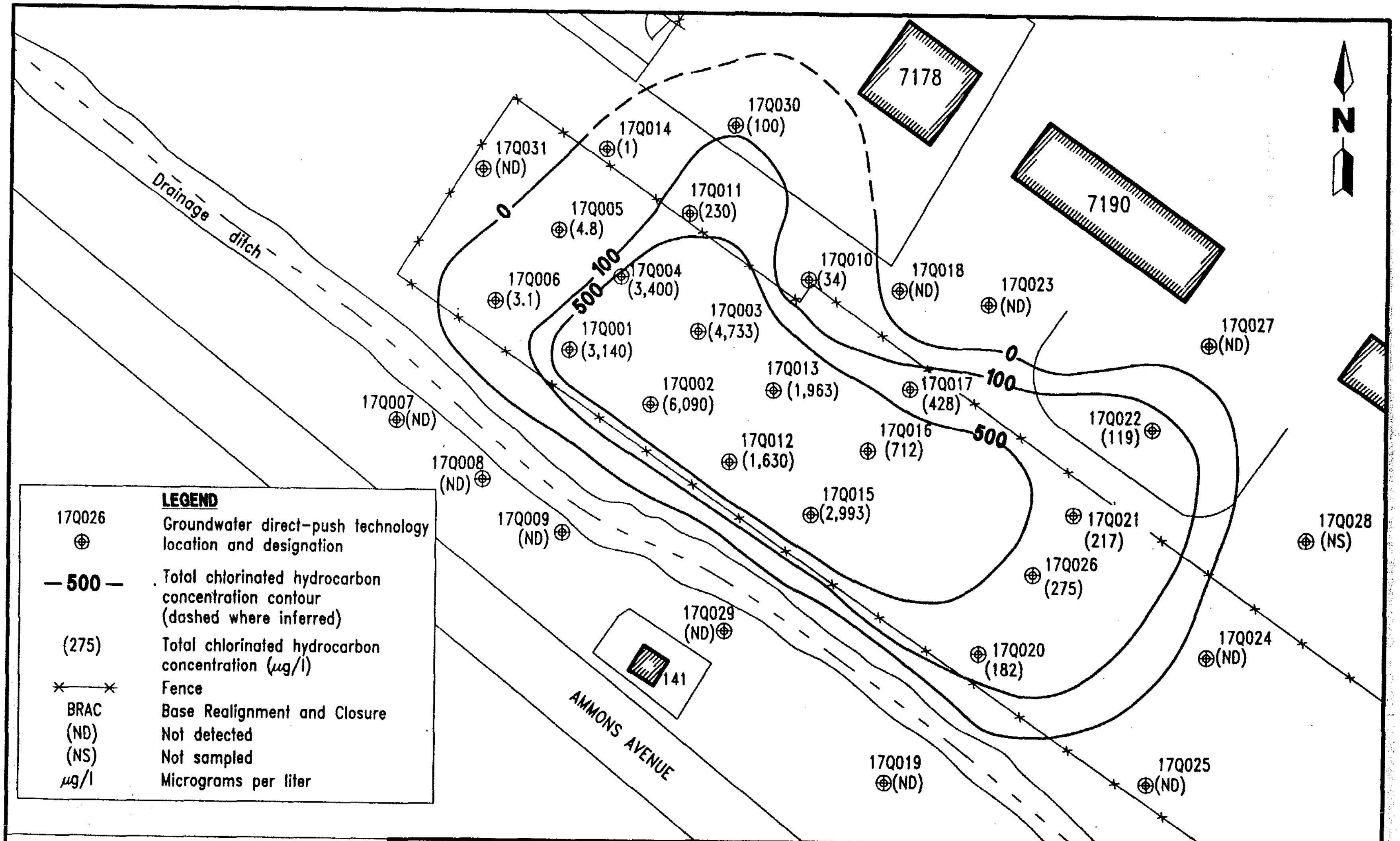

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FIGURE 4-4
TOTAL CHLORINATED HYDROCARBON CONCENTRATION CONTOUR MAP INTERMEDIATE ZONE

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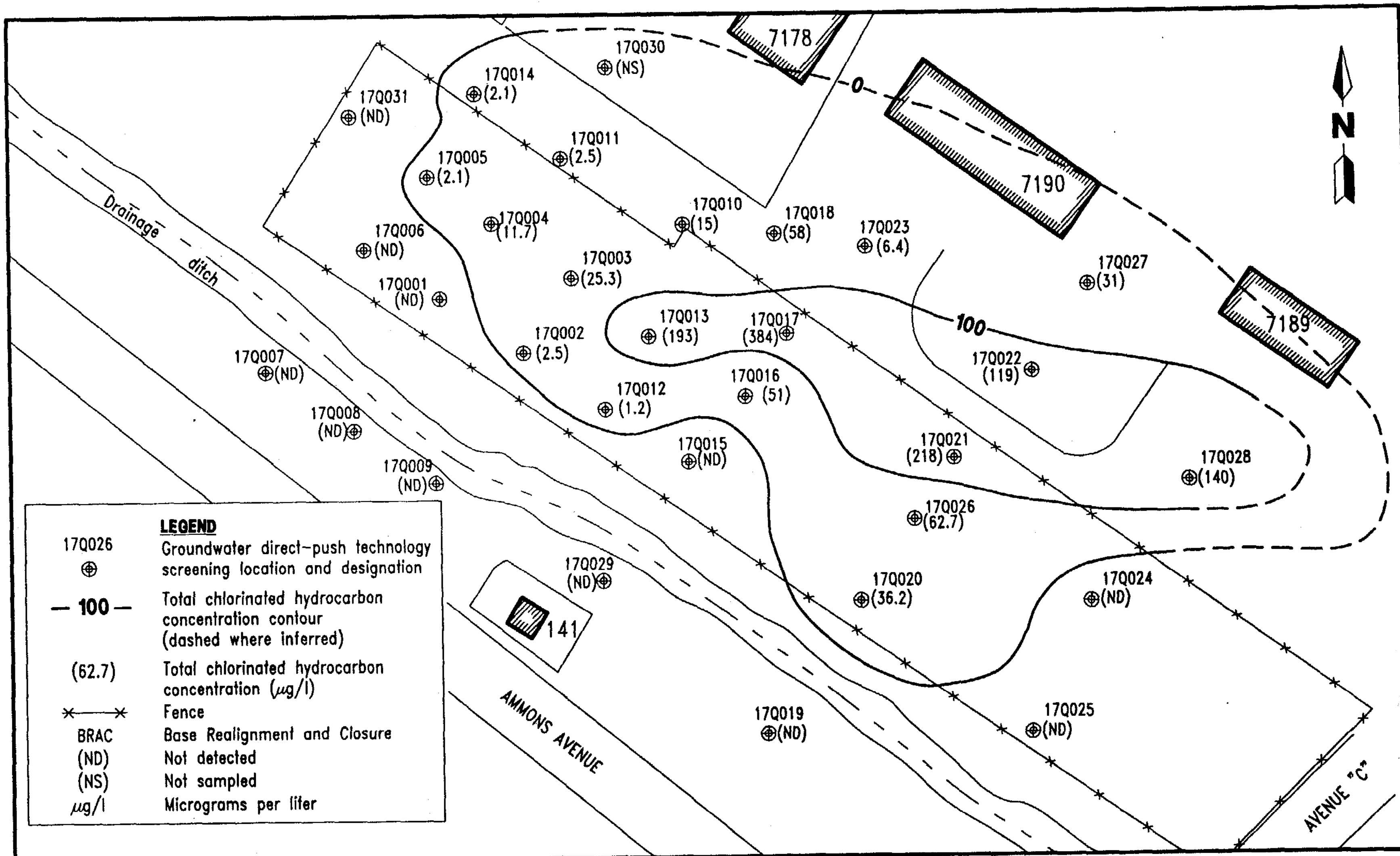

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FIGURE 4-5
TOTAL CHLORINATED HYDROCARBON CONCENTRATION CONTOUR MAP DEEP ZONE

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interval ranged from 60 to 65 $\mu g/\ell$. Contaminated groundwater below the Hawthorn Group clay is limited to the immediate area of both source areas.

The four BTEX compounds (benzene, toluene, ethylbenzene, and xylene) were also detected in samples collected along the upper surface of the shallow sandy silt layer in both source areas. The total concentration of these compounds in any given sample was generally less than 10 $\mu g/\ell$. A listing of the on-site groundwater analytical results is provided in Appendix H.

Eighteen of the groundwater screening samples were submitted to an off-site laboratory for confirmation of the field screening results. On-site field laboratory results generally compare favorably to off-site analytical laboratory results, especially in the lower total VOC concentration range. Six of the samples had no detections with the on-site laboratory. The nondetections were confirmed in five of the samples with the off-site results, and the sixth sample had only a minor detection of 1 $\mu g/\ell$. The off-site results for the remaining samples where significant detections occurred indicated that the on-site laboratory detected the same compounds. The on-site laboratory accurately detected (within 10 percent) a given compound's concentration 90 percent of the time. A summary of the detections in off-site groundwater confirmation samples is presented in Table B-3 of Appendix B. A summary of the complete analytical results is presented in Table C-3 of Appendix C.

<u>4.4.3 Soil Screening</u> The results of the soil vapor headspace survey are presented in Table 4-1. The net organic vapor concentration (i.e., vapor concentration attributed to source other than methane) was plotted and contoured on Figure 4-6.

The highest net vapor concentration in the western source area was 70 ppm at boring 17B056. The highest concentration in the eastern source area was over 400 ppm at boring 17B066. The areal limits of the vadose zone containing hydrocarbon vapors generally conform to the limits of the contamination along the water table surface, with the exception that the highest soil vapor concentrations were actually measured in samples collected from areas located 25 to 50 feet downgradient of the suspected source areas. This may be the result of a number of factors, including the permeability of the soil in the vadose zone.

Duplicate samples collected at locations 17B056 and 17B066 were submitted to an off-site laboratory to analyze for the presence of any chlorinated VOCs. No VOCs were detected in either sample. A summary of the complete analytical results is presented in Table C-1 of Appendix C.

<u>4.5 PHASE II GROUNDWATER CONFIRMATION PROGRAM</u>. The Phase II groundwater confirmation program was designed to confirm the DPT screening results. Permanent monitoring wells were installed to sample groundwater at various depth intervals to determine groundwater quality. Other aspects of the program involved the collection of surface water and sediment samples from the drainage canal, as well as groundwater samples from drive points installed at the base of the canal. The program also involved a characterization study of groundwater flow patterns, and included water-elevation measurements and slug testing.

Table 4-1
Soil Vapor Headspace Survey Results

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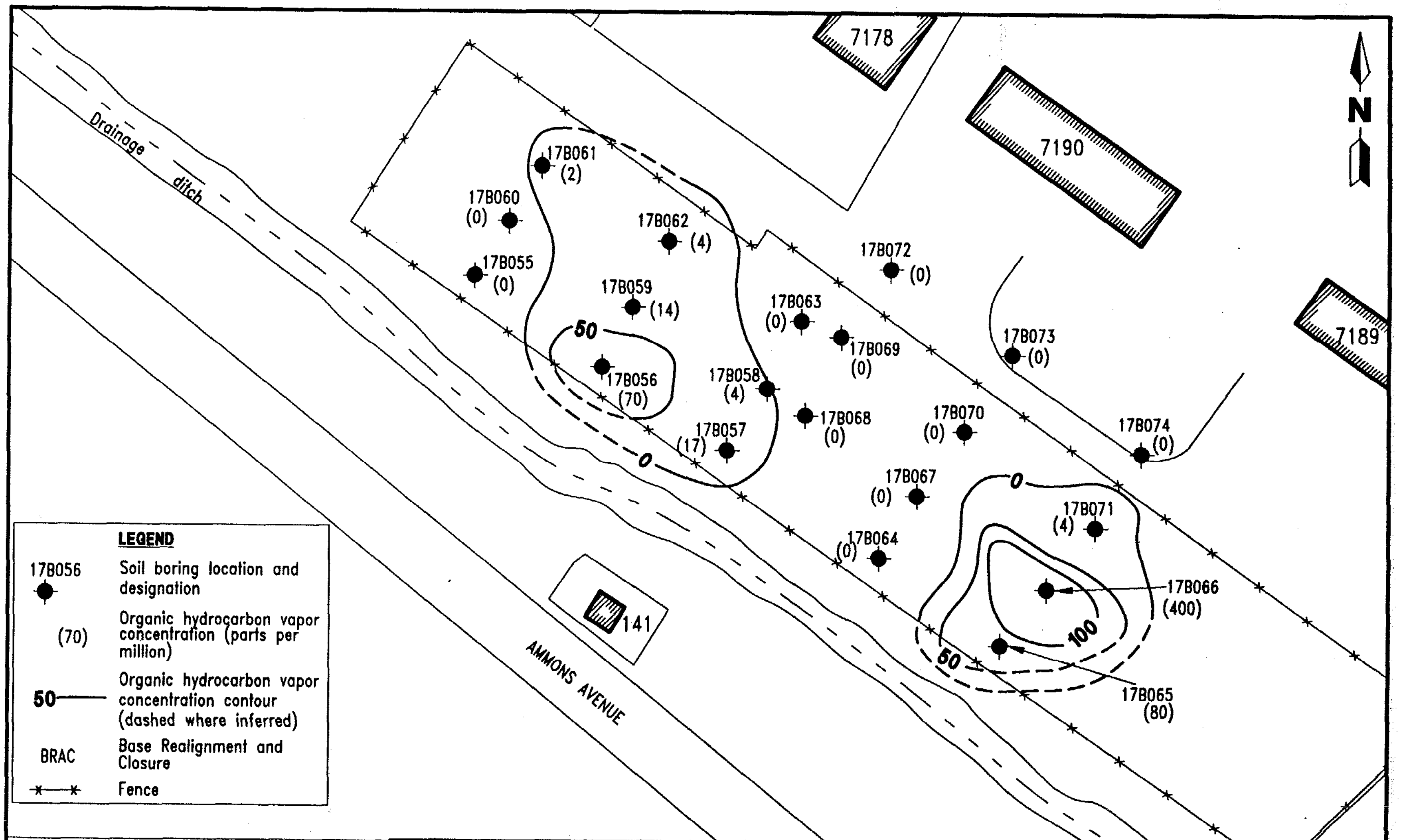
Boring Identifier	Sampling Interval (feet bls)[1]	Unfiltered Vapor Concentration (ppm)	Filtered Vapor Concentration (ppm)	Net Organic Vapor Concentration[2] (ppm)	Comments
17B055	1 to 3	10	0	0	
17B056	1 to 3	80	10	70	Location with the highest hydrocarbon vapor concentration in the western source area. Duplicate sample submitted to off-site laboratory for Contract Laboratory Program (CLP) analysis.
17B057	1 to 3	25	8	17	
17B058	1 to 3	12	8	4	
17B059	1 to 3	30	16	14	
17B060	1 to 3	0	0	0	
17B061	1 to 3	2	0	2	
17B062	1 to 3	12	8	4	
17B063	1 to 3	5	5	0	
17B064	1 to 3	1	1	0	
17B065	1 to 3	180	100	80	
17B066	1 to 3	700	300	400	Location with the highest hydrocarbon vapor concentration in the eastern source area. Duplicate sample submitted to off-site laboratory for CLP analysis.
17B067	1 to 3	0	0	0	
17B068	1 to 3	0	0	0	
17B069	1 to 3	10	0	0	
17B070	1 to 3	0	0	0	
17B071	1 to 3	10	6	4	
17B072	1 to 3	0	0	0	
17B073	1 to 3	0	0	0	
17B074	1 to 3	0	0	0	

[1] Water table measured at a depth of approximately 3 feet bls.
[2] The headspace in each soil sample was analyzed with a flame ionization detector (FID). Unfiltered concentration represents the total of all organic vapors present. Filtered concentration represents what part of the total concentration can be attributed to methane (charcoal filter adsorbs all vapors except for methane). Therefore, the net concentration represents the total vapor concentration which can be attributed to refined hydrocarbons.

Notes: bls = below land surface.
ppm = parts per million.



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SCALE: 1 INCH = 80 FEET

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FIGURE 4-6
ORGANIC VAPOR CONCENTRATION CONTOUR MAP

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4.5.1 Monitoring Well Placement and Construction Eighteen new monitoring wells were installed during the Phase II program. The new wells were incorporated with the existing wells from earlier studies to form a network of seven well clusters. Each cluster consists of a shallow ("A" designation) well, an intermediate-depth well ("B" designation), and a deep well ("C" designation). All of the shallow wells are screened at the water table, and all of the intermediate wells are screened in the intermediate unit of the surficial aquifer. The deep wells for the clusters installed in the source areas are screened in the intermediate aquifer, immediately below the shallowest clay in the Hawthorn Group. The deep wells at the other five clusters are screened in the deep unit of the surficial aquifer immediately above the clay. The monitoring well network was designed to confirm the nature and extent of the chlorinated VOC plume and, where possible, to quantify the VOCs present at critical locations within the plume boundary.

Monitoring wells OLD-17-11B and OLD-17-12C were installed adjacent to existing shallow well OLD-17-05A (Figure 4-2) to confirm the western limits of the plume. Wells OLD-17-13B and OLD-17-14C were installed adjacent to existing well OLD-17-03A to confirm the eastern limits of the plume. Monitoring wells OLD-17-15A, OLD-17-16B, and OLD-17-17C were installed along the south side of the drainage canal. OLD-17-18A, OLD-17-19B, and OLD-17-20C were installed to confirm the northeastern limits of the plume. New wells OLD-17-21B and OLD-17-22C were installed adjacent to existing shallow well OLD-17-02A to confirm the northern limits of the plume.

Two clusters were installed in each of the suspected source areas. Wells OLD-17-23A, OLD-17-24B, and OLD-17-25C were installed in the eastern source area, and OLD-17-26A, OLD-17-27B, and OLD-17-28C were installed in the western source area. These wells were designed to quantify the VOCs in the area of highest total VOC concentrations. The deep wells in these two clusters were screened below the clay that marks the base of the surficial aquifer to confirm detections at those depths.

All of the newly installed monitoring wells are constructed with 2-inch, Schedule 40, flush-jointed, threaded PVC screen and riser pipe. The wells are constructed with 0.010-inch screen. The shallow wells are constructed with 10 feet of screen, whereas the intermediate and deep wells are constructed with 5 feet of screen. The deep monitoring wells installed in the two suspected source areas (OLD-17-25C and OLD-17-28C) are constructed with an outer 6-inch-diameter PVC surface casing set into the clay layer at the base of the surficial aquifer to minimize the potential for cross contamination during well construction.

Standard penetration testing (SPT) was performed at each monitoring well cluster to aid in the well design. Samples were collected continuously from the surface to the base of the surficial aquifer using a 2-foot-long, 1-1/2-inch-diameter split-spoon sampler. Each sample was classified using the USCS and screened with an FID. The SPT results were combined with the CPT results to construct a more detailed lithologic profile of the site.

The newly installed monitoring wells were developed to ensure proper formation of the filter pack. This was accomplished by pumping water from the well at varying rates to remove fine soil particles and to improve hydraulic connection with the surrounding aquifer. A minimum of three well volumes were purged from the wells, and purging continued until the turbidity was reduced as much as possible and the field measurements of turbidity, pH, temperature, and conductivity had stabilized.

4.5.2 Groundwater Sampling Groundwater samples were collected from all 21 monitoring wells in the network of clusters, as well as from existing wells OLD-17-04A and OLD-17-10C. Prior to sample collection, the wells were purged to ensure that groundwater representative of the surrounding aquifer was present in the well. The wells were purged using the low-flow method to minimize volatilization. Purging continued until the turbidity was reduced as much as possible and the field measurements of turbidity, pH, temperature, and conductivity stabilized. The collected samples were submitted to an off-site laboratory and analyzed for the presence of VOCs using USEPA Test Method 524.2.

Field data sheets associated with monitoring well installation and sampling during the Phase II supplemental work, including the soil boring logs, well construction diagrams, and the well development and sampling forms during this phase of the investigation, are provided in Appendix A.

4.5.3 Drive Point, and Surface Water and Sediment Sampling Five drive points (designated OLD-17-29A through OLD-17-33A) were installed through the base of the drainage canal to sample the groundwater immediately below the canal. Surface water and sediment samples (designated 17W030/17D030 through 17W034/17D034) were collected adjacent to (upstream of) each drive point. The five sampling locations were spaced at a (nominal) 100-foot interval along the drainage canal south of the SA. The sample locations were placed approximately one-quarter of the way across the canal, as measured from the north side. The canal was approximately two feet deep at the time of the investigation.

The drive points are constructed of 1-inch-diameter stainless steel. Each point consisted of one foot of slotted screen (0.010-inch slot) and five feet of riser. The screened interval was driven to the point where the top of the screen was approximately six inches below the base of the canal. Each drive point was equipped with a screw cap to prevent water from entering through the top. Drive points were sampled using the same protocol as was used in the sampling of the monitoring wells.

Surface water samples were collected at the midpoint between the water surface and the canal bottom. Prior to sample collection, the temperature, conductivity, pH, and turbidity of the water were measured and recorded. The sediment samples were collected with stainless steel hand augers. Surface water and sediment samples were submitted to an off-site laboratory for analysis of volatile compounds by USEPA Test Methods 524.2 and 8010, respectively.

4.5.4 Groundwater Flow Evaluation In order to evaluate the groundwater flow properties at the site, water-level elevation measurements were made at the permanent monitoring wells, piezometers, drive points, and the surface water in the drainage canal to determine the direction of flow. Hydraulic conductivity (slug) tests were also performed at selected wells to evaluate hydraulic properties of the surficial aquifer.

Water-level elevations were calculated by surveying each measuring point and referencing them to a permanent elevation datum. For the monitoring wells and drive points, the reference point was the top of the well casing. A staff gauge was installed in the drainage canal, and the top was used as a reference point to measure the elevation of the surface water. Two rounds of water-level measurements were made during the investigation to compare changes in the elevation of the water table. Water-level elevations between individual wells at each cluster were made to determine the vertical hydraulic potential within the aquifer.

In situ slug tests were performed on selected monitoring wells to measure the hydraulic conductivity of the surficial aquifer. Slug tests were performed by placing a pressure transducer in the monitoring well to measure changes in water level during the test. A PVC slug was then swiftly lowered into the well to drive the water back into the aquifer, and the falling head phase was monitored. After allowing for equilibrium, the slug was removed swiftly to pull water back into the well and the rising head phase was monitored. The well was allowed to recover to within 90 percent of the static water level before the test was stopped. Data were processed in the Aqtesolv™ software program using the method of Bouwer and Rice (1976). For wells where the top of the screen was above the water table, the plot was analyzed using the double straight line method (Bouwer and Rice, 1989) to account for filter pack drainage.

4.6 PHASE II CONFIRMATION RESULTS. The analytical results on samples collected from the various environmental media confirmed exceedances of chlorinated VOCs with the same general distribution as was demonstrated by the on-site analytical program.

4.6.1 Groundwater Analytical Results. Samples collected from 16 of the 28 monitoring wells and drive points had detections of one or more chlorinated VOCs. Detections at 12 of the 16 well locations are at concentrations that exceed screening criteria. A summary of the detections in groundwater collected from the monitoring wells and drive points is presented in Table B-3 of Appendix B. A complete summary of analytical results is presented in Table C-3 of Appendix C. Sampling locations are shown on Figure 4-7.

In the OLD-17-05A, OLD-17-11B, and OLD-17-12C cluster, only the sample collected from the shallow well (17G00502) had detections of chlorinated VOCs. The compound M-dichlorobenzene was detected at a concentration of 0.67 $\mu g/\ell$.

Samples collected from the three wells in the OLD-17-03A, OLD-17-13B, and OLD-17-14C cluster had no detections. Of the samples collected from the OLD-17-18A, OLD-17-19B, and OLD-17-20C cluster, only the sample from OLD-17-20C had detections, which included the following compounds: 1,1-dichloroethane at 3.4 $\mu g/\ell$; 1,1-DCE at 1 $\mu g/\ell$; cis-1,2-DCE at 98 $\mu g/\ell$; trans-1,2-DCE at 0.76 $\mu g/\ell$; and vinyl chloride at 140 $\mu g/\ell$. Only the concentration of cis-1,2-DCE and vinyl chloride exceed screening criteria, including the GCTLs and Federal MCLs.

Samples collected from the three wells in the OLD-17-15A, OLD-17-16B, and OLD-17-17C cluster had no detections. Of the samples collected from the three wells in the OLD-17-02A, OLD-17-21B, and OLD-17-22C cluster, only the sample from the deep well (17G02201) had detections: chloromethane at 1.6 $\mu g/\ell$ and cis-1,2-DCE at 1.7 $\mu g/\ell$. Neither concentration exceeds regulatory screening criteria.

Samples collected from the three wells in the western source area (OLD-17-26A, OLD-17-27B, and OLD-17-28C) had detections. The sample from the shallow well (17G02601) had the following detections: cis-1,2-DCE at 1.9 $\mu g/\ell$ and vinyl

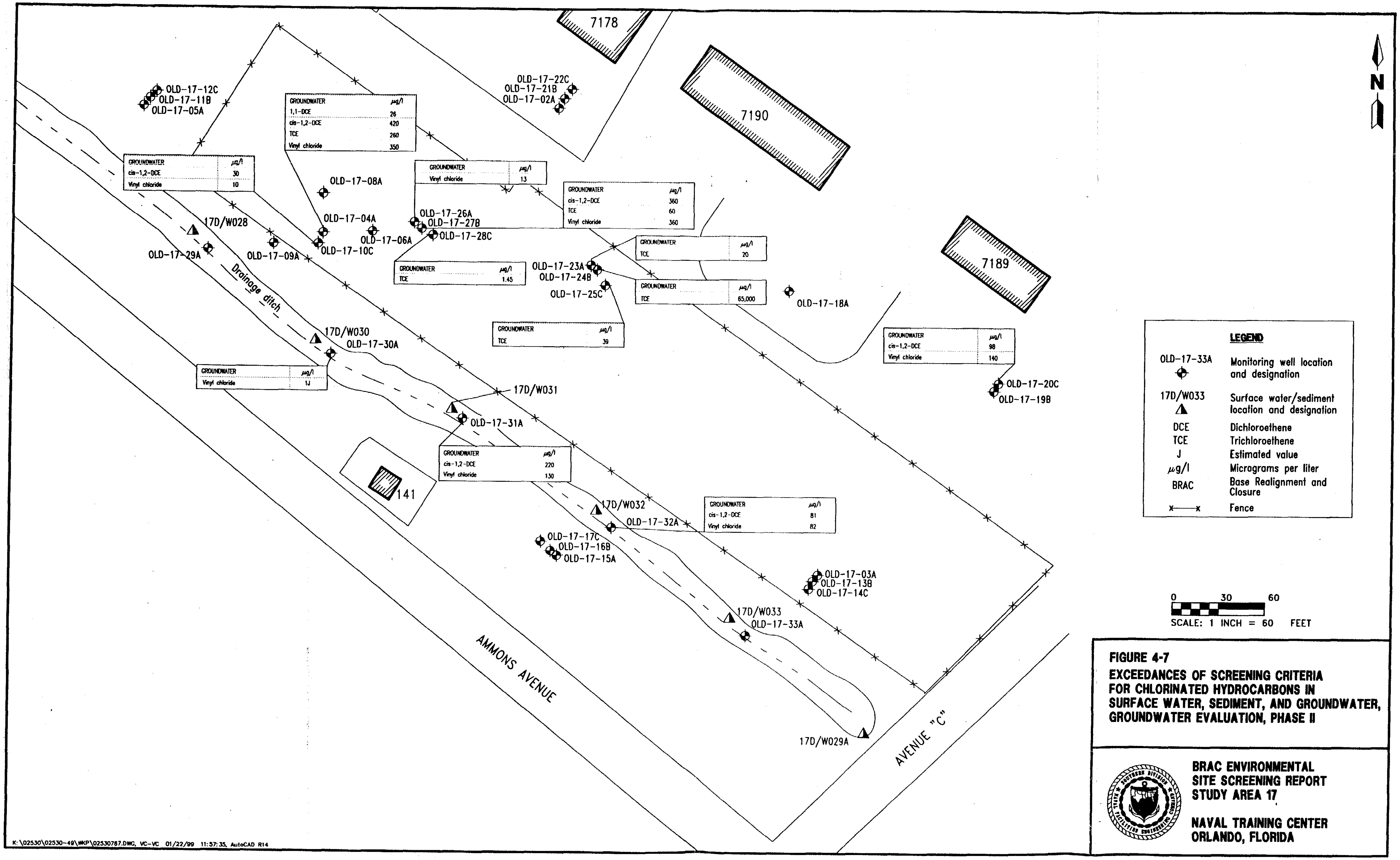

FIGURE 4-7
EXCEEDANCES OF SCREENING CRITERIA FOR CHLORINATED HYDROCARBONS IN SURFACE WATER, SEDIMENT, AND GROUNDWATER, GROUNDWATER EVALUATION, PHASE II

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chloride at 13 μg/ℓ (only vinyl chloride exceeds regulatory criteria). The sample from the intermediate well (17G02701) had the following detections: 1,1-DCE at 6.1 μg/ℓ; cis-1,2-DCE at 360 μg/ℓ; toluene at 1.8 μg/ℓ; trans-1,2-DCE at 12; TCE at 60 μg/ℓ; and vinyl chloride at 360 μg/ℓ (cis-1,2-DCE, TCE, and vinyl chloride concentrations exceed regulatory criteria). The sample from the deep well (17G02801) had the following detections: cis-1,2-DCE at 2.3 μg/ℓ and TCE 1.4 μg/ℓ. These concentrations do not exceed screening criteria.

Samples collected from the three wells in the cluster placed at the eastern source area (OLD-17-23A, OLD-17-24B, and OLD-17-25C) had detections. The sample from the shallow well (17G02301) had the following detections: cis-1,2-DCE at 9.9 μg/ℓ and TCE at 20 μg/ℓ (only TCE exceeds regulatory criteria). The only detection in the sample collected from the intermediate well was TCE at 65,000 μg/ℓ. (The GCTL for TCE is 3 μg/ℓ.) The sample from the deep well (17G02501) had the following detections: cis-1,2-DCE at 1.9 μg/ℓ and vinyl chloride at 13 μg/ℓ. The concentration of vinyl chloride is the only compound that exceeds screening criteria.

Samples were also collected from monitoring wells OLD-17-04A and OLD-17-10C. Both samples had detections of more than one chlorinated VOC. The sample from the shallow well (17G04004) had the following detections: 1,1-DCE at 26 μg/ℓ; cis-1,2-DCE at 420 μg/ℓ; trans-1,2-DCE at 4.1 μg/ℓ; TCE at 260 μg/ℓ; and vinyl chloride at 350 μg/ℓ (the concentration of every compound but trans-1,2-DCE exceeds regulatory criteria). The sample from the deep well (17G01003) had the following detections: cis-1,2-DCE at 30 μg/ℓ; TCE at 6.9 μg/ℓ; and vinyl chloride at 10 μg/ℓ. The concentration of TCE and vinyl chloride exceed screening criteria.

Where comparative data exists, the analytical results from samples collected with DPT compare favorably with the analytical data from monitoring wells. There are 12 samples from which one may draw a direct comparison (i.e., samples which were obtained from a similar depth interval). Five of the 12 sample pairs reported nondetections. At the other seven locations, the on-site results are consistent with regards to detecting the type of compound present and the concentration. In general, the on-site concentrations are larger by a factor of two to three times. This is a typical result when one compares analytical results from DPT and monitoring wells: monitoring well sampling requires a higher volume of water from the sampling interval and may provide a more dilute concentration. DPT versus monitoring well concentrations are summarized in Table 4-2 and described below.

Groundwater samples collected from four of the five drive points had detections of chlorinated VOCs, with the concentrations at three of the four exceeding regulatory criteria. The only detection at drive point OLD-17-29A was TCE at 2.5 μg/ℓ. At drive point OLD-17-30A, the only chlorinated compounds detected were cis-1,2-DCE at 1.1 μg/ℓ and vinyl chloride at 1 μg/ℓ. (The concentration of vinyl chloride equals the GCTL.) The compounds detected at OLD-17-31A were cis-1,2-DCE at 220 μg/ℓ; toluene at 1 μg/ℓ; trans-1,2-DCE at 2.2 μg/ℓ; and vinyl chloride at 130 μg/ℓ (cis-1,2-DCE and vinyl chloride exceed regulatory criteria). At OLD-17-32A, cis-1,2-DCE was detected at a concentration of 81 μg/ℓ, trans-1,2-DCE was detected at 1.9 μg/ℓ, and vinyl chloride was detected at 82 μg/ℓ. The concentration of cis-1,2-DCE and vinyl chloride exceed screening criteria.

Table 4-2
Comparison of Groundwater Analytical Results, Monitoring Well (Off-Site CLP Laboratory) versus DPT (with On-Site Field Laboratory Analysis)

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Monitoring Well ID	Screened Interval (feet bls)	VOC Concentration (µg/ℓ) (CLP Laboratory)	Nearest DPT Screening Point[1]	DPT Sampling Interval[2] (feet bls)	VOC Concentration (µg/ℓ) (Field Laboratory)
OLD-17-03A	2 to 12	<2	17Q02502	9 to 10	<0.5
OLD-17-04A	2 to 12	1,1-DCE @ 8.6 cis-1,2-DCE @ 420 TCE @ 260 VC @ 350	17Q00102	10 to 14	1,1-DCE @ 82 cis-1,2-DCE @ 1,500 TCE @ 950 VC @ 620
OLD-17-13B	15 to 20	<2	17Q02502	19 to 20	<0.5
OLD-17-14C	43 to 48	<2	17Q02505	49 to 50	<0.5
OLD-17-15A	2 to 12	<2	17Q01902	10 to 14	<0.5
OLD-17-16B	15 to 20	<2	17Q01904	20 to 24	<0.5
OLD-17-23A	2 to 12	cis-1,2-DCE @ 8.8 TCE @ 20	17Q01702	10 to 14	cis-1,2-DCE @ 24 TCE @ 140
OLD-17-24B	20 to 25	TCE @ 65,000	17Q01704	20 to 24	1,1-DCE @ >1,000 cis-1,2-DCE @ >1,000 TCE @ >84,000 VC @ >1,000
OLD-17-25C	58 to 63	cis-1,2-DCE @ 0.78 PCE @ 0.49 TCE @ 39	17Q01708	59 to 60	cis-1,2-DCE @ 2.2 PCE @ 1.3 TCE @ 59
OLD-17-26A	2 to 12	cis-1,2-DCE @ 1.9 VC @ 13	17Q00301	5 to 9	1,1-DCE @ 4.1 cis-1,2-DCE @ 33 TCE @ 25 VC @ 98
OLD-17-27B	15 to 20	1,1-DCE @ 6.1 cis-1,2-DCE @ 360 trans-1,2-DCE @ 12 TCE @ 60 VC @ 360	17Q00303	15 to 19	1,1-DCE @ 58 cis-1,2-DCE @ 3,200 trans-1,2-DCE @ 80 PCE @ 80 TCE @ 5.5 VC @ 1,400
OLD-17-28C	58 to 63	cis-1,2-DCE @ 2.3 TCE @ 1.4	17Q00308	59 to 60	cis-1,2-DCE @ 8.9 TCE @ 3.6 VC @ 9.7

[1] Monitoring well clusters were installed within 5 feet of the screening point.
[2] DPT sampling interval shown is that interval which best corresponds to the screened interval of the cited monitoring well. In each instance the DPT sampling interval is located within the screen's depth interval.

Notes: CLP = Contract Laboratory Program.
DPT = direct-push technology.
ID = identifier.
bls = below land surface.
VOC = volatile organic compound.
µg/ℓ = micrograms per liter.
< = less than.
@ = at.
DCE = dichloroethene.
TCE = trichloroethene.
VC = vinyl chloride.
PCE = tetrachloroethene.

4.6.2 Surface Water and Sediment Analytical Results.

4.6.2.1 **Surface Water** Four of the five surface water samples had detections of toluene, and two of the five had detections of either TCE or vinyl chloride. Sample 17W03001 had detections of toluene at 5.2 $\mu g/\ell$ and TCE at 1.2 $\mu g/\ell$. Sample 17W03101 had detections of toluene at 20 $\mu g/\ell$ and TCE at $\mu g/\ell$. Samples 17W03201, 17W03301, and 17W03401 all had detections of toluene only at concentrations of 17 $\mu g/\ell$, 18 $\mu g/\ell$, and 25 $\mu g/\ell$, respectively (Figure 4-8). None of the compounds were detected at concentrations exceeding surface water standards.

4.6.2.2 **Sediment** Three of the five sediment samples had detections of toluene and one had a detection of vinyl chloride. Sample 17D03001 had a detection of methylene chloride at a concentration of 4.4 $\mu g/kg$. Sample 17D03101 had detections of methylene chloride (4.8 $\mu g/kg$) and vinyl chloride (0.72 $\mu g/kg$). Sample 17D03201 had a detection of methylene chloride (5.1 $\mu g/kg$). Sample 17D03301 had detections of methylene chloride (6 $\mu g/kg$) and toluene (1 $\mu g/kg$). Sample 17D03401 had detections of methylene chloride (3.6 $\mu g/kg$) and toluene (0.51 $\mu g/kg$). As with the surface water, none of compounds were present at a concentration exceeding sediment screening criteria.

A summary of the detections in surface water and sediment is presented in Tables B-4 and B-5, respectively, of Appendix B. A summary of the complete surface water and sediment analytical results is presented in Tables C-4 and C-5, respectively, of Appendix C.

4.6.3 Plume Geometry. The analytical results from the confirmation sampling effort support the general geometry of the plume as determined by the field screening results presented in Subsection 4.4.2, and as depicted on Figures 4-4, 4-5, and 4-6. In the shallow and intermediate parts of the surficial aquifer, the plume extends approximately 150 to 250 feet east-southeast from the source areas. The plume extends approximately 50 to 75 feet west and approximately 100 to 150 north from the source areas at these depth intervals. The plume affects a larger part of the area in the deepest part of the aquifer. At that interval the plume extends approximately 250 to 300 feet east-southeastward, approximately 50 to 75 feet to the west, and approximately 150 to 200 feet from the source areas. The plume has migrated through the surficial aquifer and the shallowest clay of the Hawthorn Group to a depth of at least 63 feet bls in both source areas.

The analytical results of the drainage canal samples (surface water, sediment, and groundwater) indicate that the plume has migrated downgradient and is discharging to the canal. The VOC concentrations in the sediment and surface water are much lower than in the groundwater collected from the drive points, suggesting that the VOCs are volatilizing and being diluted upon entering the drainage canal. All of the groundwater samples collected from the monitoring wells south of the drainage canal had no detections of any VOCs, suggesting that the plume extends no farther south than the drainage canal.

The lithologic and analytical data gathered during the screening and confirmation programs were used to generate two cross-section profiles through the study area.

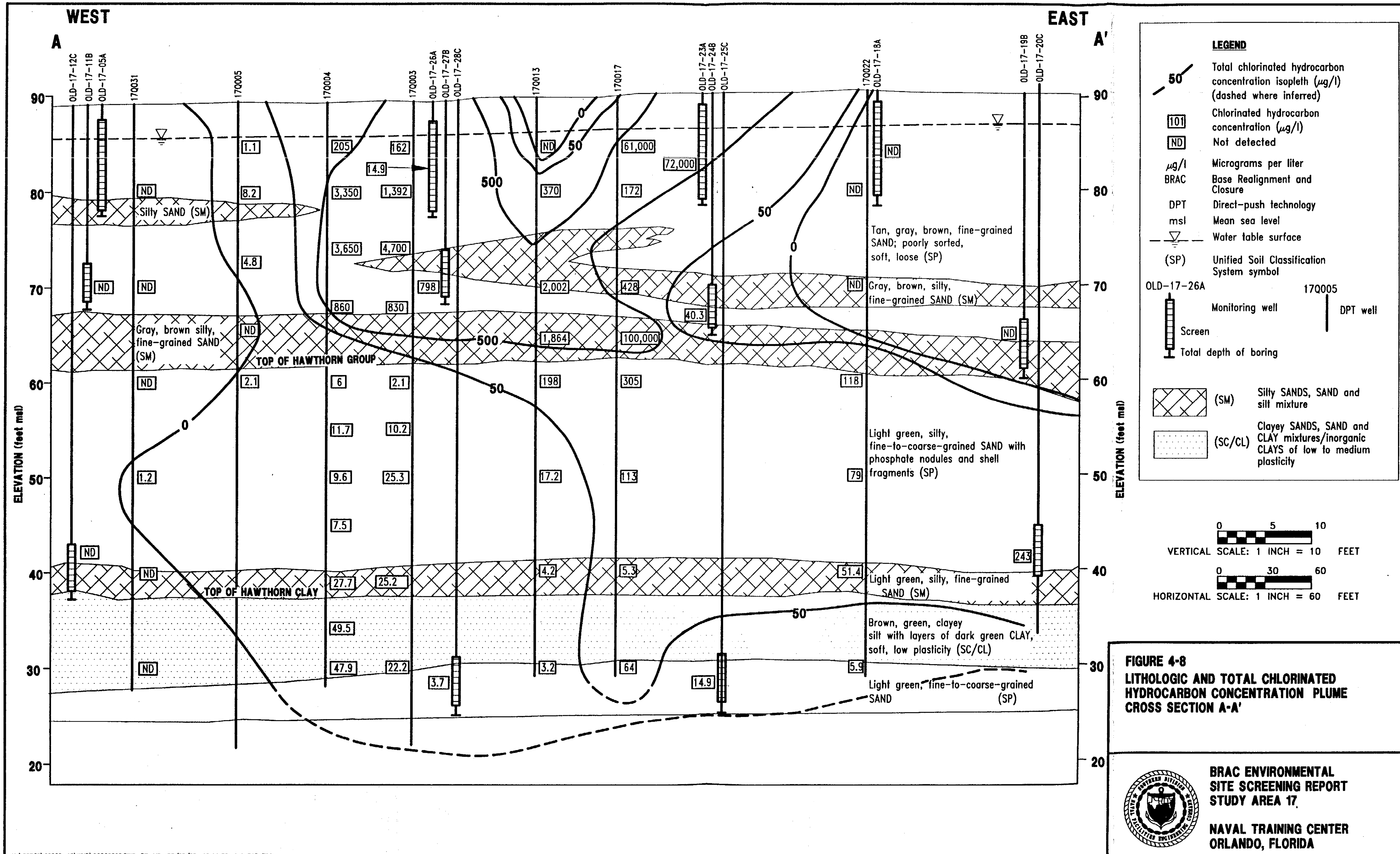

FIGURE 4-8
LITHOLOGIC AND TOTAL CHLORINATED HYDROCARBON CONCENTRATION PLUME CROSS SECTION A-A'

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Cross section A-A' (Figure 4-8) was constructed from west to east through the long axis of the plume and includes both of the suspected source areas. Cross section B-B' (Figure 4-9) was constructed from north to south through the eastern source area and includes the drainage canal.

The highest VOC concentrations occur along the upper surfaces of the shallow silty sand layers in both source areas. These layers are finer-grained than the surrounding material in the aquifer and act as an aquitard, thus inhibiting downward groundwater flow and the migration of contaminants. VOC concentrations above and between the two silty sand layers are as much as three orders of magnitude higher than those immediately below the two layers, where the total VOC concentrations are generally less than 50 $\mu g/\ell$.

The upper surface of the shallowest clay in the Hawthorn Group at the base of the surficial aquifer represents another area where contaminants have accumulated. The total VOC concentration at that depth in the two source areas ranged from 50 to 100 $\mu g/\ell$. Immediately below the clay layer the total concentration decreased to less than 50 $\mu g/\ell$.

4.6.4 **Groundwater Flow and Plume Migration** Water-level elevation data collected from the network of monitoring wells, piezometers, drive points, and the staff gauge are presented in Table I-1 of Appendix I. Two rounds of measurements were made, one in July and the other in August 1998. The water-level elevation data during the July event was used to construct the potentiometric surface maps of the shallow (water table), intermediate, and deep parts of the surficial aquifer, as depicted on Figures 4-10, 4-11 and 4-12, respectively.

The water table at SA 17 generally conforms to the topographic surface, and, during the field investigation, was approximately 3 feet bls beneath the site. The results of the initial round (July 1998) of water-level measurements indicate mounding of the potentiometric surface in the central part of the site, generally extending from monitoring well OLD-17-26A to OLD-17-18A. The mounding was less pronounced during the second round (August 1998) of water-level measurements. The reduction in the mounding may be attributed to the fact that a leaking potable water pipeline was repaired in the time interval between the two rounds of water levels.

The groundwater in the shallow part of the aquifer flows laterally outward in a radial pattern from the mound area with the steeper gradient is to the south and southeast. The average horizontal gradient in the shallow zone is 0.004 feet/foot (ft/ft). In the intermediate portion of the aquifer, the lateral groundwater flow pattern is along a ridge extending between well OLD-17-26A and OLD-17-03A. Flow is to the east-southeast away from the ridge. The average gradient in the intermediate zone is 0.003 ft/ft. In the deepest part of the aquifer the lateral flow pattern is eastward with a gradient of 0.002 ft/ft.

The hydraulic potential survey was performed by comparing the water-level elevation between the wells in each cluster. This analysis also included a comparison of the water-level elevations in the five drive points to that of the surface water in the drainage canal in order to assess the nature of hydraulic interaction. Vertical gradients were calculated based on these hydraulic potential differences and screen (mid-point) intervals. The monitoring well construction details are presented in Table I-2 of Appendix I. The survey results are presented in Table I-3 of Appendix I.

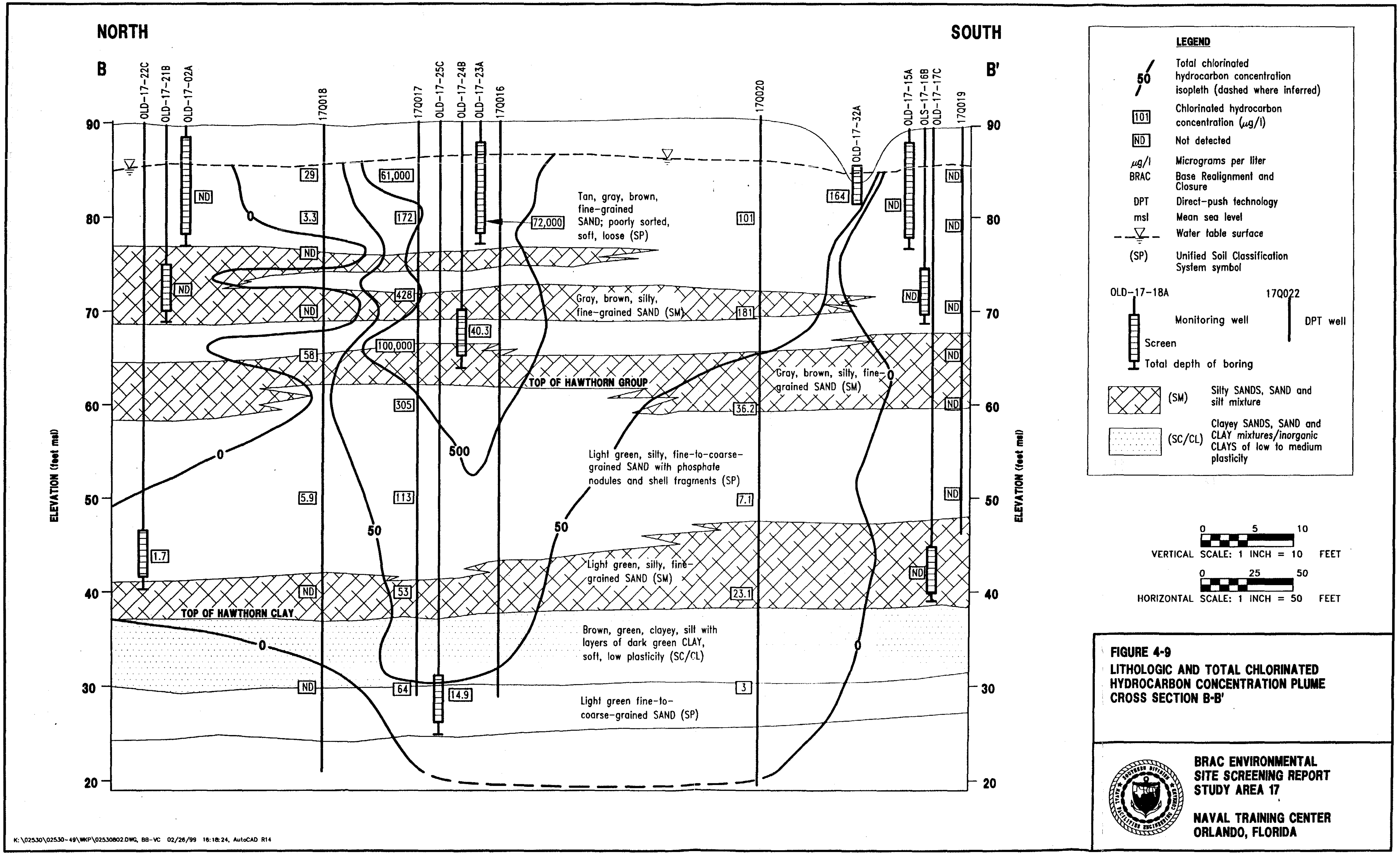

FIGURE 4-9
LITHOLOGIC AND TOTAL CHLORINATED HYDROCARBON CONCENTRATION PLUME CROSS SECTION B-B'

BRAC ENVIRONMENTAL SITE SCREENING REPORT STUDY AREA 17

NAVAL TRAINING CENTER ORLANDO, FLORIDA

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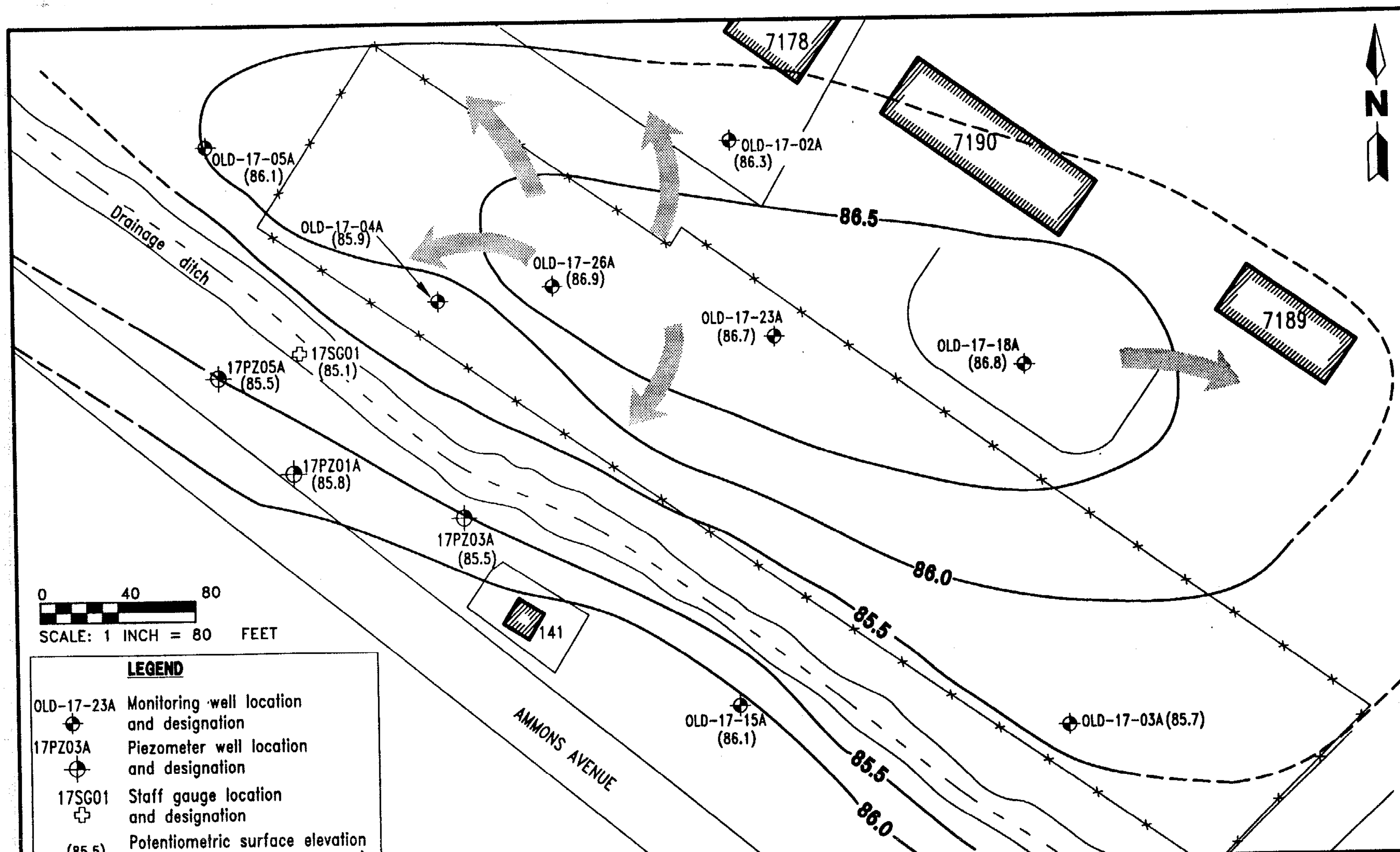

LEGEND

OLD-17-23A	Monitoring well location and designation
17PZ03A	Piezometer well location and designation
17SG01	Staff gauge location and designation
(85.5)	Potentiometric surface elevation (in feet above mean sea level)
—86.5	Potentiometric surface elevation contour (dashed where inferred)
×—×	Fence
	General direction of groundwater flow
BRAC	Base Realignment and Closure

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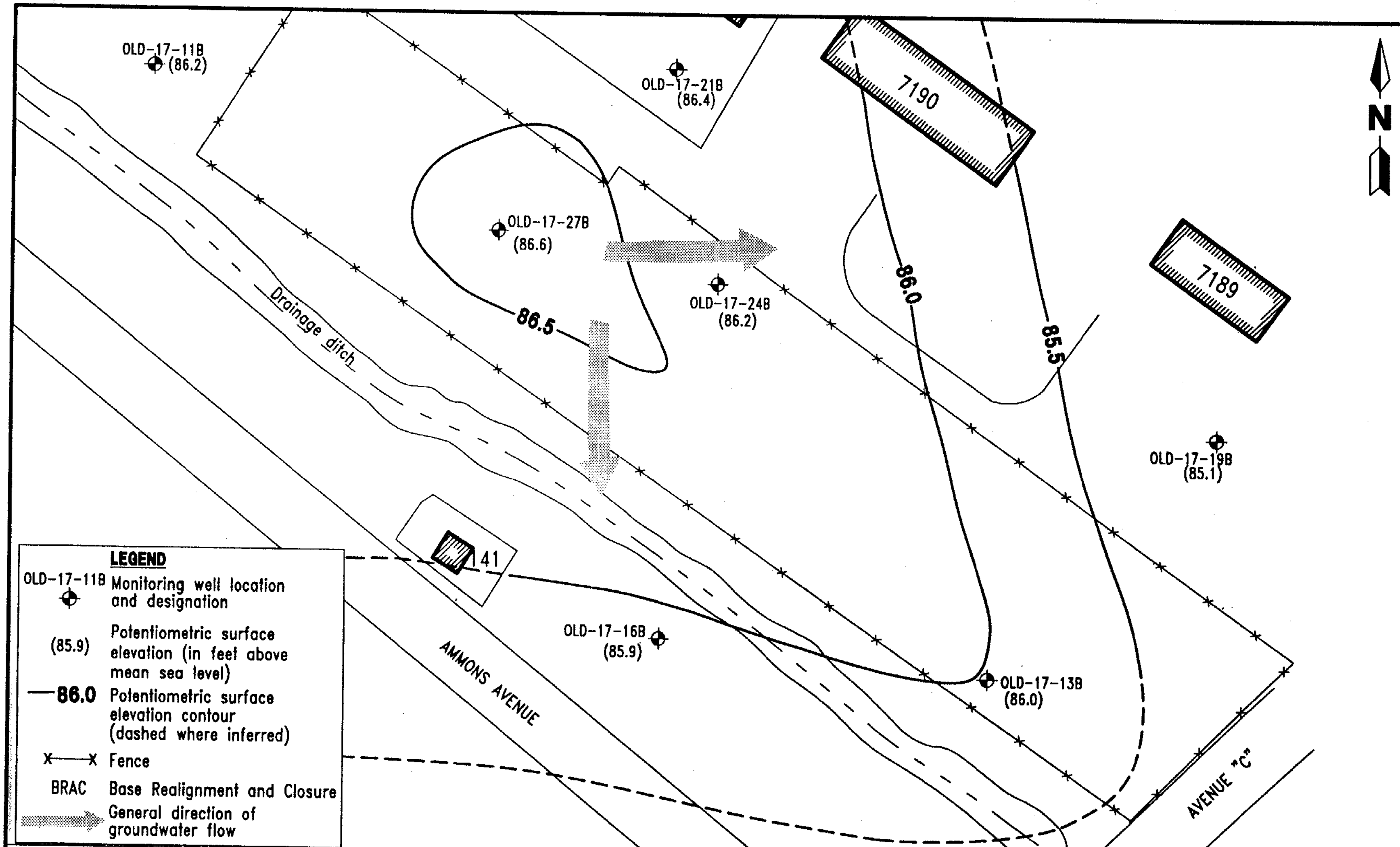
FIGURE 4-10
POTENTIOMETRIC SURFACE CONTOUR MAP
WATER TABLE SURFACE

BRAC ENVIRONMENTAL SITE SCREENING REPORT STUDY AREA 17

NAVAL TRAINING CENTER ORLANDO, FLORIDA



0 40 80
SCALE: 1 INCH = 80 FEET

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FIGURE 4-11
POTENTIOMETRIC SURFACE CONTOUR MAP
INTERMEDIATE ZONE

BRAC ENVIRONMENTAL SITE SCREENING REPORT
STUDY AREA 17

NAVAL TRAINING CENTER
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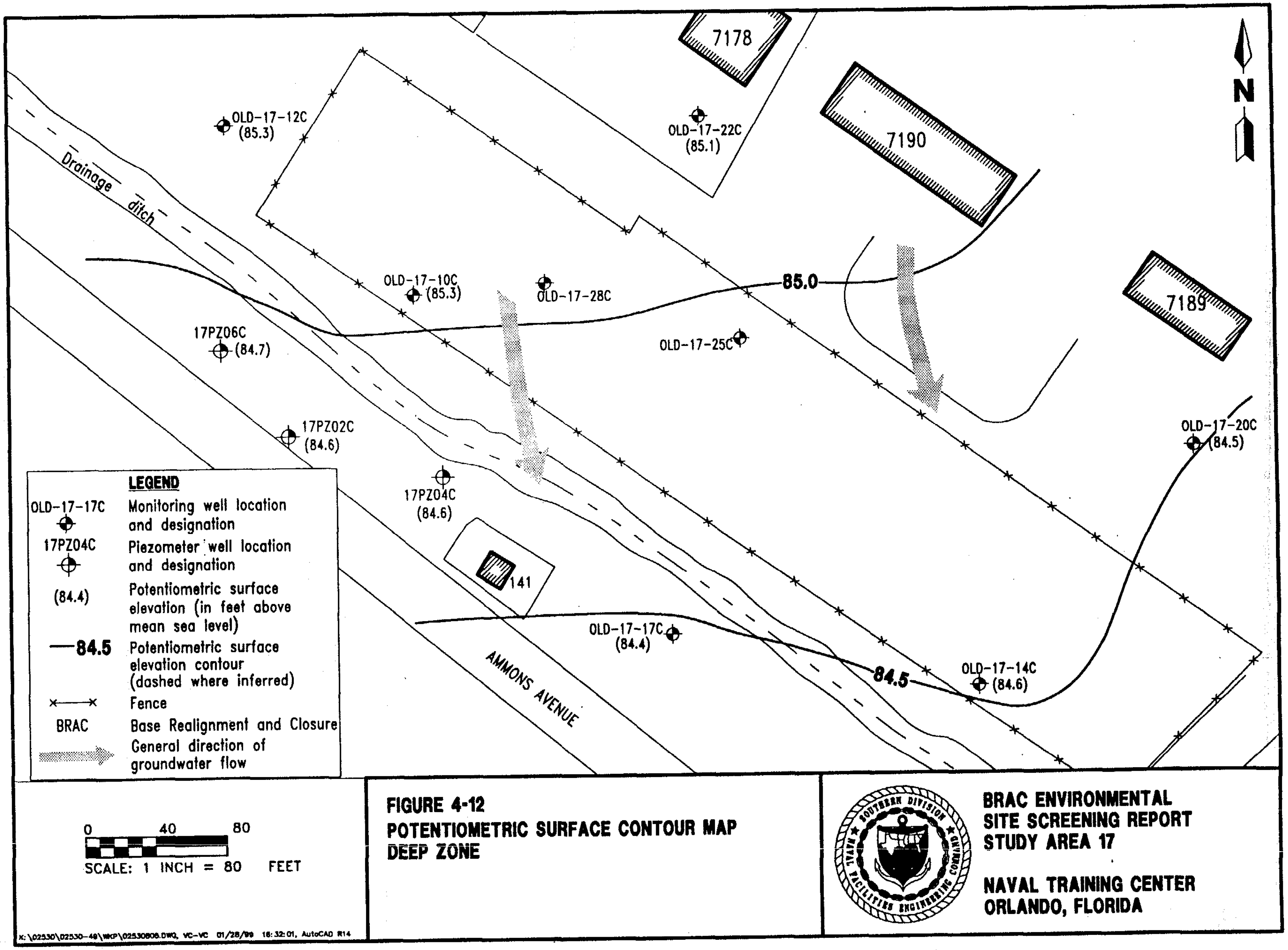

FIGURE 4-12
POTENTIOMETRIC SURFACE CONTOUR MAP
DEEP ZONE

BRAC ENVIRONMENTAL SITE SCREENING REPORT
STUDY AREA 17

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There appears to be a relatively strong downward component to groundwater flow across the entire site except for the areas adjacent to the drainage canal, where groundwater in the upper part of the aquifer discharges to the canal. The vertical gradient measures in the range of 0.007 ft/ft to 0.020 ft/ft in the upper part of the aquifer (Figure 4-13). In the drainage canal and the immediate vicinity of the canal, however, the gradient is upward (approximately 0.25 ft/ft). The hydraulic potential throughout the lower part of the aquifer is downward (Figure 4-14), and ranges from 0.03 ft/ft to 0.05 ft/ft.

The survey results indicate that groundwater flow potential in the shallow part of the surficial aquifer is downward in both source areas, and that some lateral radial flow also occurs. The downward potential exists everywhere except the immediate vicinity of the drainage canal. However, downward flow cannot be confirmed without vertical conductivity data. In the area of the canal, groundwater in the shallow, and possibly the intermediate, part of the upper aquifer flows upward and discharges to the canal. Potential flow throughout the deeper part of the aquifer is downward. Consequently, plume migration is influenced by the lithology and the groundwater flow pattern in the area. The plume has migrated downward from the source areas and along the upper surfaces of the silty sand layers before discharging to the drainage canal.

The hydraulic conductivity values were combined with the average horizontal gradient determined for the various depth intervals of the aquifer to determine groundwater flow velocities. The groundwater flow rate calculations are based on the following equation (Fetter, 1980):

$$V = Ki/p \tag{1}$$

where: V = groundwater flow velocity (ft/day),
K = hydraulic conductivity (ft/day),
i = hydraulic gradient (ft/ft), and
p = effective porosity (unitless, assumed at 0.30 for sand aquifers

The mean hydraulic conductivity value for the shallow wells was 1.1×10^{-3} feet per minute (ft/min), or 1.5 feet per day (ft/day). The mean conductivity value for the intermediate wells was 3.0×1^{-4} ft/min, or 0.5 ft/day. The mean conductivity value for the deep wells was 1.0×10^{-3} ft/min, or 2.5 ft/day. Although the hydraulic conductivity values were somewhat higher in the shallow and deep intervals, all of the values fall within a relatively narrow range, indicating that the coarser-grained section of the surficial aquifer in the site is relatively homogeneous. This translated into a mean groundwater flow rate of 7.3 ft per year (ft/yr) for the upper part of the surficial aquifer in the SA; a mean rate of 1.8 ft/yr for the intermediate unit of the aquifer; and a mean rate of 6.1 ft/yr for the deep part of the aquifer.

Assuming that contaminant migration is predominantly driven by advective transport, estimates of groundwater flow velocity may be used to conservatively assess plume movement. As previously stated, groundwater flow velocities range between approximately 2 to 7 feet per year; therefore, the contaminants of concern may also be migrating at similar rates and in similar direction(s). The extent of the plume, both in size and shape, appears to support use of the advective transport assumption. These relatively low velocities represent

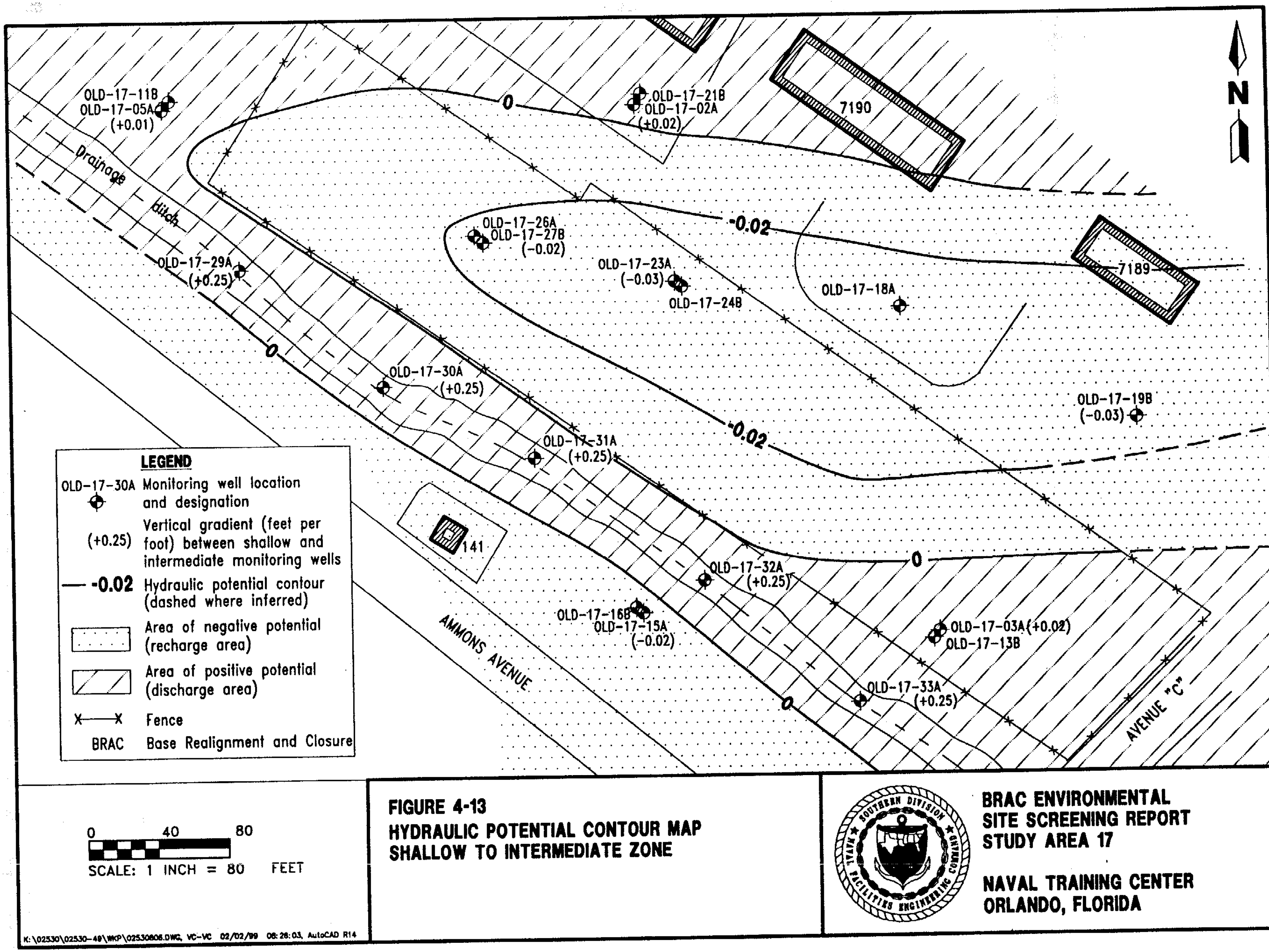

FIGURE 4-13
HYDRAULIC POTENTIAL CONTOUR MAP
SHALLOW TO INTERMEDIATE ZONE

BRAC ENVIRONMENTAL SITE SCREENING REPORT STUDY AREA 17

NAVAL TRAINING CENTER ORLANDO, FLORIDA

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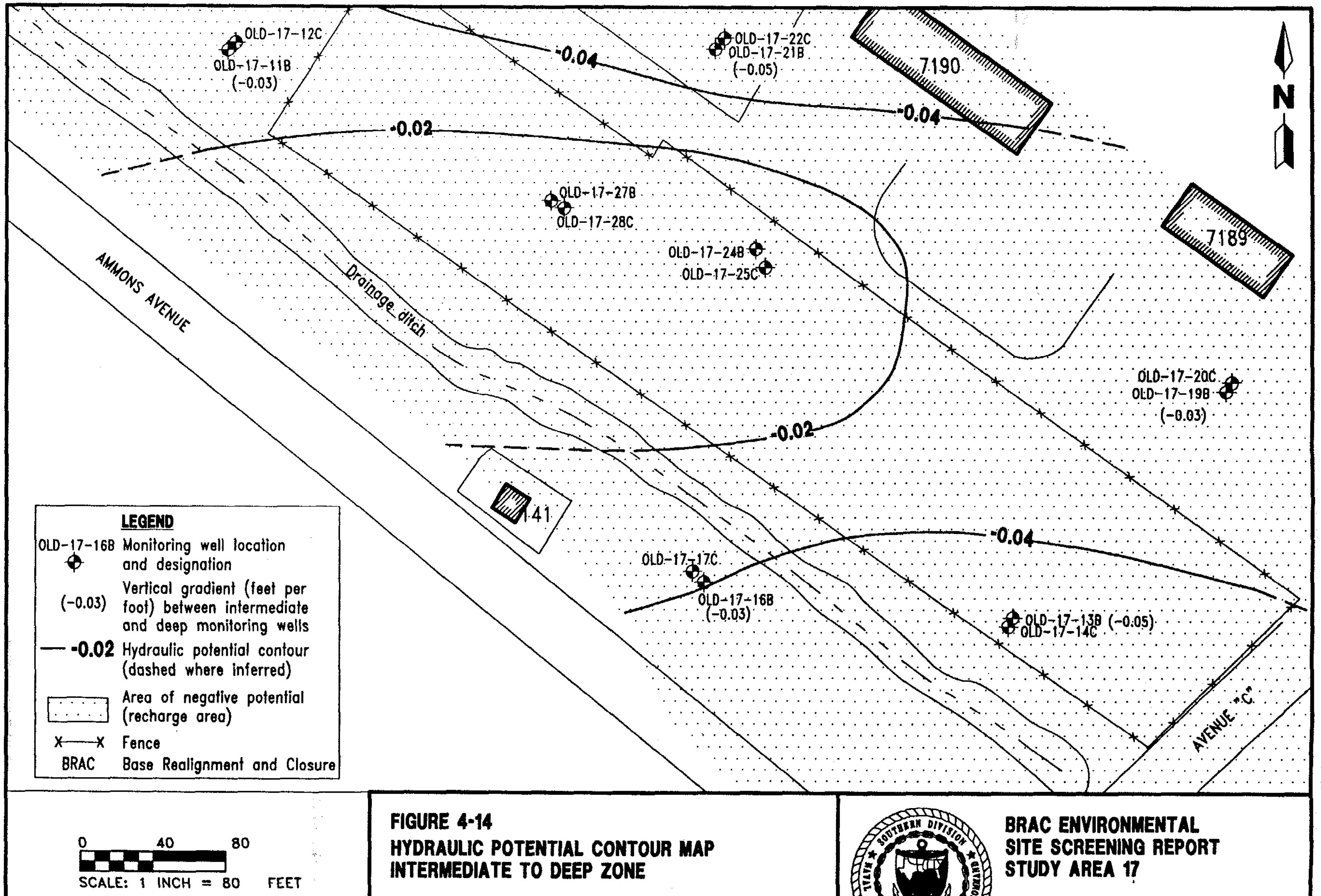

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FIGURE 4-14
HYDRAULIC POTENTIAL CONTOUR MAP
INTERMEDIATE TO DEEP ZONE

BRAC ENVIRONMENTAL SITE SCREENING REPORT
STUDY AREA 17

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

conditions where monitored natural attenuation (MNA) may be a viable remedial solution.

As shown on the cross sections (Figures 4-8 And 4-9), it also appears that contaminants are migrating downward through the surficial aquifer. This condition is likely due to the relatively strong downward potential observed in much of the study area. However, little information relative to vertical hydraulic conductivity properties of the alluvial materials is available at this time. Assessments of these properties were not included in the scope of this site screening investigation. Further characterization of these parameters is critical to fully understanding groundwater flow conditions at this site. Due to anisotropy inherent in alluvial systems, vertical hydraulic conductivity values are typically an order of magnitude less conductive to flow than horizontal conductivity values. Furthermore, it is not unusual for vertical conductivity values to be two or more orders of magnitude lower than horizontal values. Further assessment of these conditions will support evaluation of both groundwater flow and contaminant movement within the surficial aquifer.

The test results are presented in Table I-4 of Appendix I. Slug-test semi-log plots are presented in Appendix J.

5.0 STUDY AREA 17, CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSIONS. The various environmental media at SA 17 have been adversely affected by previous activities at the site. A summary of the findings of this investigation by medium is presented below. A summary of HLA's recommendations for the site are presented in Section 5.2.

5.1.1 Soil Both the surface and subsurface soil have been contaminated with PAH compounds at concentrations that exceed screening criteria. Contaminated surface soil that exceeds screening criteria is concentrated in the former motor pool compound. Subsurface soil with PAH concentrations exceeding screening criteria was detected at only two locations, and industrial screening criteria were only exceeded at one of these locations. The surface soil has higher concentrations of contaminants than the subsurface soil.

5.1.2 Groundwater Chlorinated VOCs have adversely affected the groundwater throughout the surficial aquifer and the upper part of the intermediate aquifer of the Hawthorn Group sediments in isolated areas in the area of the former motor pool compound. Given the contaminant distribution pattern, the plume appears to have originated from two release points at the surface located in the western and central parts of the former motor pool area. The highest contaminant concentrations were detected along the water table in the source areas and along the upper surface of a silty sand layer that is located between 15 and 25 feet bls. In the western source area, the compounds detected at the highest concentrations were cis-1,2-DCE and vinyl chloride at concentrations of up to 400 $\mu g/\ell$. In the eastern source area, TCE was the predominant compound detected, with concentrations of up to 65,000 $\mu g/\ell$.

The plume configuration has an estimated volume of approximately 1,000,000 cubic feet. The plume extends along the water table from both source areas for a distance of approximately 50 to 100 feet in the direction of groundwater flow (east-southeast). In the intermediate unit of the surficial aquifer, the plume extends a distance of 200 to 250 feet downgradient, and in the deep unit of the aquifer, the plume extends approximately 250 to 300 feet from the source areas. The plume has also migrated downward through the shallowest clay in the Hawthorn Group to a depth of at least 65 feet bls within the intermediate aquifer. The highest total VOC concentration detected at that depth interval was approximately 40 $\mu g/\ell$.

In addition to the lithologic framework, plume migration has been affected by the natural groundwater flow pattern. Groundwater flows horizontally in the source areas in a radial pattern, with the steeper gradient southward toward the drainage canal. There is a strong downward component to groundwater flow potential throughout the surficial aquifer. The relatively flat horizontal gradient contributes to low flow rates throughout the surficial aquifer. The flow rates vary from approximately 2 ft/yr in the intermediate unit of the surficial aquifer to 6 and 7 ft/yr for the shallow and deep units of the aquifer, respectively.

5.1.3 Surface Water and Sediment. It does not appear that the plume has adversely affected the surface water or sediment in the drainage canal located along the south side of the site. Even though groundwater samples collected from drive points installed through the bottom of the canal had exceedances of screening criteria for several compounds, neither the surface nor the sediment samples collected from the drainage canal had VOC detections that exceeded screening criteria.

5.1.4 Site Conceptual Model The results of the groundwater evaluation were used to develop a site conceptual model (SCM) for SA 17. The SCM provides a framework within which the source area, release mechanism(s), and environmental pathways of potential concern are identified. The SCM is based upon our current understanding of the various environmental media and pathways. The model may also serve as a framework for conceptualizing application of future remedial technologies and focusing activities toward an appropriate solution.

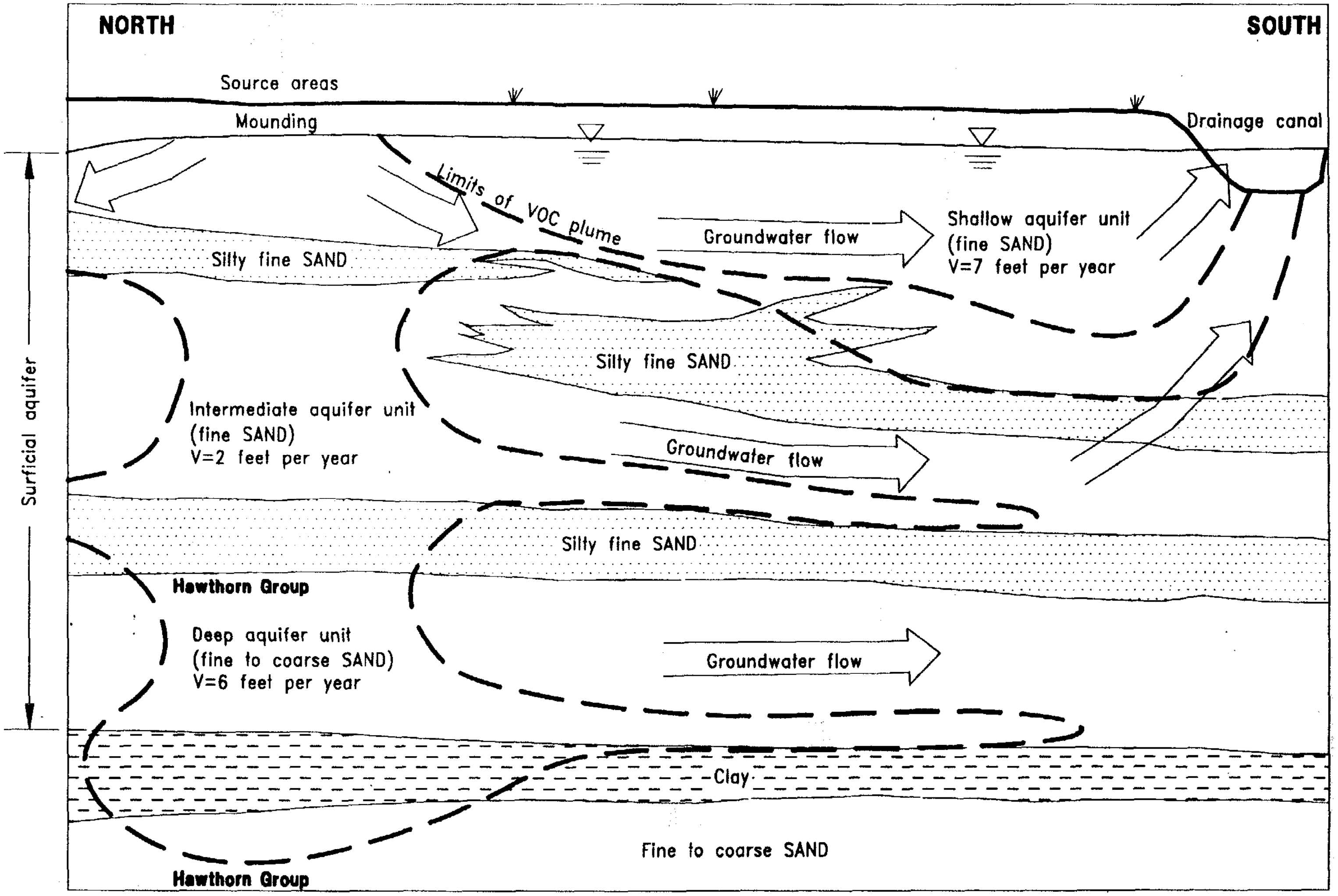
The source area is defined as the area where the release(s) of contaminants is suspected to have occurred. A contaminant release mechanism is a process that results in migration of a contaminant from a source area into the immediate environment, such as spills and/or leaks from a storage container. Once in the environment, contaminants are potentially transferred between media and transported away from the source and/or site.

A graphical SCM developed for SA 17 is depicted on Figure 5-1. The source area is suspected to have originated at the surface in at least two areas located in the east and north-central parts of the former motor pool compound. The contaminant source release(s) mechanism is suspected to be occasional, periodic, low-volume surface spills. The potential release transport mechanism for contaminant migration is seepage into the subsurface through the soil and into the groundwater. The contaminants have migrated both horizontally in the surficial aquifer, in the direction of groundwater flow, and vertically to the base of the surficial aquifer. Downward migration has been inhibited by two layers of relatively less permeable silty sand within the aquifer and the shallowest clay layer of the Hawthorn Group sediments that marks the base of the aquifer. The silty sand layers act as aquitards within the surficial aquifer. The contaminant plume divides upon encountering these aquitards, with part of the plume migrating along the upper surface in the predominant direction of groundwater flow; the remainder of the plume migrates through the aquitard.

The highest VOC concentrations occur along the upper surface of the shallowest aquitard at a depth interval of 15 to 25 feet bls. The contaminants are migrating with groundwater that discharges into the drainage canal bordering the site. This migration pattern follows the natural groundwater flow pathway in the upper part of the aquifer.

The only apparent potential exposure pathways of the chlorinated solvents are through ingestion and/or inhalation via media associated with the drainage canal. The VOC concentrations in surface water and sediments associated with the canal are currently relatively low, but the natural groundwater flow patterns continue to transport contaminants with high concentrations of contaminants in the direction of the canal.

5.2 RECOMMENDATIONS. Because of the nature and extent of PAHs in soil, and the concentrations of chlorinated VOCs in groundwater and the drainage canal, HLA recommends a reclassification of SA 17 from 7/Gray to 6/Red. HLA also recommends



LEGEND

▽	Water table surface
V	Groundwater flow velocity
VOC	Volatile organic compound
BRAC	Base Realignment and Closure

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FIGURE 5-1
SITE CONCEPTUAL MODEL

BRAC ENVIRONMENTAL SITE SCREENING REPORT STUDY AREA 17

NAVAL TRAINING CENTER ORLANDO, FLORIDA

that additional assessment and limited remedial activities be implemented. The specific recommendations are listed in the subsections below.

5.2.1 Soil. Because the PAH contamination is distributed in relatively small, isolated patches across the site, HLA recommends that an Interim Remedial Action (IRA) be developed and implemented. The IRA will involve excavation of the surface soil that exceeds industrial screening criteria for disposal off site. A work plan has been prepared that presents the proposed limits of excavation that would likely be required to remediate the site to industrial screening criteria (HLA, 1999). Although the results of the screening investigation permitted the general definition of the limits of PAH contamination, the IRA should include the collection of confirmatory surface soil samples for laboratory analysis to assure that contamination has been remediated to levels that are protective of human health and the environment for the intended reuse, which is industrial (HLA, 1999).

Although the contamination in the subsurface is less severe and of limited areal extent, HLA recommends that this material be addressed during the IRA and excavated along with the surface soil. This would eliminate the need for any deed restrictions in transfer documents.

5.2.2 Groundwater, Surface Water, and Sediment HLA recommends that a natural attenuation (NA) assessment be performed expeditiously to evaluate this approach as a potential remedial alternative for the VOC plume. The assessment should involve the collection of groundwater samples from selected monitoring wells for analysis of NA parameters, and should be conducted in accordance with USEPA Region 4 Standard Operating Procedures (USEPA, 1996). Evaluation of this data, combined with analysis of the hydraulic relationships between the aquifer units would provide an understanding of biodegradation rates, as well as contaminant fate and transport.

Regarding the immediate exposure concerns posed by the drainage canal, HLA recommends that a preliminary risk evaluation (PRE) be performed. The existing analytical database can be utilized for the PRE. The PRE should consist of the following components:

- a hazard identification,
- an exposure assessment,
- a toxicity assessment,
- a risk characterization, and
- an uncertainty assessment.

Preliminary MNA scoring and further evaluation, if scoring results are favorable, are recommended, and should be consistent with current USEPA protocol (USEPA, 1998). Evaluation of vertical hydraulic conductivity values and further assessment of vertical groundwater movement is also recommended to support fate and transport analysis. The results of the NA assessment and the PRE should be used to determine the need for a focused feasibility study (FFS). Further evaluation may determine that data gaps exist. If this is the case, it may be necessary at that time to install one or more additional monitoring wells to better define the depth and lateral extent of the VOC plume. However, at this time, HLA is not recommending the placement of any additional wells. If an FFS is required, then HLA recommends that a preliminary feasibility study pilot study be implemented, possibly involving bioenhancement through the application of hydrogen release compounds into strategic monitoring wells to accelerate natural degradation processes.

The undersigned members of the OPT concur with the findings and recommendations of the preceding investigation.

STUDY AREA 17	
Nancy Rodriguez	4/22/99
U.S. Environmental Protection Agency, Region IV	Date
David P. Grabka	4/22/99
Florida Department of Environmental Protection	Date
Wayne J. Hansel	4-22-99
U.S. Department of the Navy	Date

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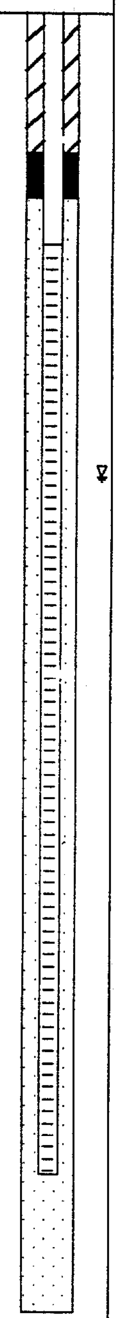
APPENDIX A

SOIL BORING LOGS, MONITORING WELL CONSTRUCTION DIAGRAMS, MONITORING WELL DEVELOPMENT FORMS, and GROUNDWATER SAMPLING FIELD DATA SHEETS

Project: BRAC NTC Orlando	**Site:** S.A. 17	**Boring No.:** OLD-17-01A
Client: SOUTHDIVNAVFACENGCOM		**Job No.:** CTO-107
Contractor: GEOTEK	**Date started:** 05/15/95	**Compltd:** 05/15/95
Method: Hollow stem auger	**Casing Size:** 2 in.	**Screen Int.:** 10 ft.
Protection level: D	**Ground Elev.:**	**Type of OVM.:** Porta FID
Total depth: 14Ft.	**Dpth to** ⊽ 5 Ft.	**Logged by:** M. Hawes
Well Development Date:	**Well ID:** OLD-17-01A	

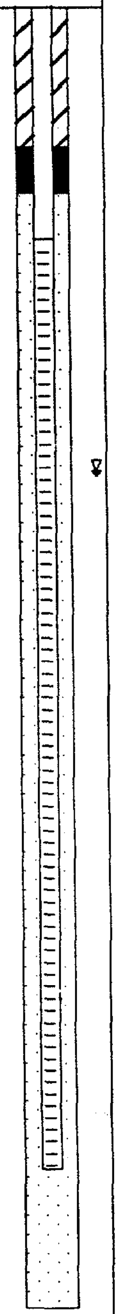
Depth Ft.	Sample ID (Depth) (Type)	Split Spoon	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.
0					QUARTZ SAND: Gray, fine, silty		SM	
1					QUARTZ SAND: Tan, silty, good to moderate rounding			
4	17B00101 (4-6')			0				10,15
5			90%					18,32
6	17B00101MS 17B00101MSD (6-10')			0	SAND: Lenses of coarse white sand interlayered with fine, brown, clayey-silty sand			8,12
7			90%					10,10
8				0				10,13
9			90%					9,12
10				0				8,8
11			90%		SILTY SAND: Light brown, fine, good sorting, good to moderate rounding			12,10
12				0				8,8
13			90%					11,10
14					TD			
15								



HLA-ES

Project: BRAC NTC Orlando	**Site:** S.A. 17	**Boring No.:** OLD-17-02A
Client: SOUTHDIVNAVFACENGCOM		**Job No.:** CTO-107
Contractor: GEOTEK	**Date started:** 05/14/95	**Compltd:** 05/14/95
Method: Hollow stem auger	**Casing Size:** 2 in.	**Screen Int.:** 10 ft.
Protection level: D	**Ground Elev.:**	**Type of OVM.:** Porta FID
Total depth: 14Ft.	**Dpth to** ▽ 5 Ft.	**Logged by:** M. Hawes
Well Development Date:		**Well ID:** OLD-17-02A

Depth Ft.	Sample ID (Depth) (Type)	Split Spoon	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.
0					Asphalt			
					QUARTZ SAND: Brown, fine, silty		SM	
4	17B00201 (4-8')		75%	0	QUARTZ SAND: Tan, fine, silty, good to moderate rounding			5,5
5								8,14
6			85%	0				2,5
7								7,9
8			90%	0				4,8
9					QUARTZ SAND: Off-white, fine, silty, good to moderate rounding			5,8
10			90%	0				5,7
11								13,22
12			80%	0				4,4
13								5,7
14					TD			
15								



HLA-ES

Project: BRAC NTC Orlando	**Site:** S.A. 17	**Boring No.:** OLD-17-03A
Client: SOUTHDIVNAVFACENGCOM		**Job No.:** CTO-107
Contractor: GEOTEK	**Date started:** 05/16/95	**Compltd:** 05/16/95

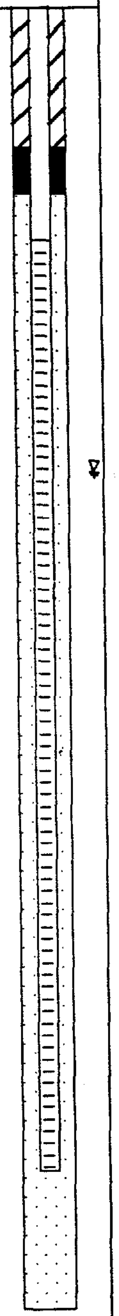
Method: Hollow stem auger	**Casing Size:** 2 in.	**Screen Int.:** 10 ft.	**Protection level:** D
Ground Elev.:	**Type of OVM.:** Porta FID	**Total depth:** 14Ft.	**Dpth to ∇** 6 Ft.
Logged by: M. Hawes	**Well Development Date:**		**Well ID:** OLD-17-03A

Depth Ft.	Sample ID (Depth) (Type)	Split Spoon	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.
					Asphalt			
				0	QUARTZ SAND: Dark brown, fine		SP	
				0				
	17B00301 (4-6')				QUARTZ SAND: Tan, fine, silty, good to moderate rounding		SM	16,16
5			80%	0				20,22
								5,8
			90%	0				10,11
								4,5
			90%	0				5,7
10								5,8
			90%	0				11,12
								4,5
			90%	0				5,7
					TD			
15								

HLA-ES

Project: BRAC NTC Orlando	**Site:** S.A. 17	**Boring No.:** OLD-17-04A
Client: SOUTHDIVNAVFACENGCOM		**Job No.:** CTO-107
Contractor: GEOTEK	**Date started:** 05/18/95	**Compltd:** 05/18/95
Method: Hollow stem auger	**Casing Size:** 2 in. / **Screen Int.:** 10 ft.	**Protection level:** D
Ground Elev.:	**Type of OVM.:** Porta FID / **Total depth:** 14Ft.	**Dpth to ▽** 5 Ft.
Logged by: M. Hawes	**Well Development Date:**	**Well ID:** OLD-17-04A

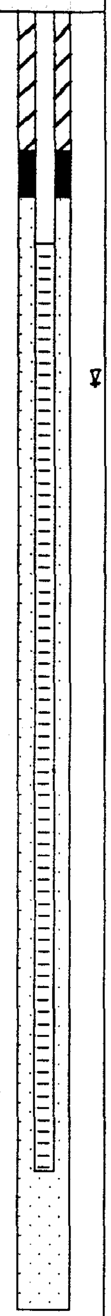
Depth Ft.	Sample ID (Depth) (Type)	Split Spoon	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.
0					Limestone rock			
					QUARTZ SAND: Dark brown, fine		SP	
					QUARTZ SAND: Tan, fine, silty, good to moderate rounding		SM	
4	17B00401 (4-8')							12,20
5			70%	0				24,22
6								5,8
7			80%	0				7,13
8								4,4
9			80%	0				8,9
10								4,7
11			90%	0				6,7
12								5,7
13			90%	10				9,0
14					TD			
15								



HLA-ES

Project: BRAC NTC Orlando		**Site:** S.A. 17	**Boring No.:** OLD-17-05A
Client: SOUTHDIVNAVFACENGCOM			**Job No.:** CTO-107
Contractor: GEOTEK		**Date started:** 05/15/95	**Compltd:** 05/15/95
Method: Hollow stem auger	**Casing Size:** 2 in.	**Screen Int.:** 10 ft.	**Protection level:** D
Ground Elev.:	**Type of OVM.:** Porta FID	**Total depth:** 14Ft.	**Dpth to ▽** 4 Ft.
Logged by: M. Hawes	**Well Development Date:**		**Well ID:** OLD-17-05A

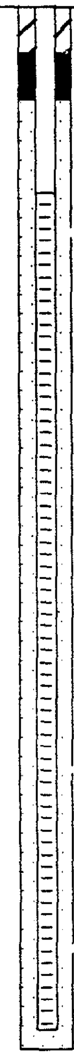
Depth Ft.	Sample ID (Depth) (Type)	Split Spoon	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.
					QUARTZ SAND: Gray, silty, fine		SM	
				0	QUARTZ SAND: Tan, silty, fine, good to moderate rounding			
				0				
	17B00502 (4-6')							6,9
5			100%	0				11,13
					SAND: Interlayered lenses of coarse, white sand and fine, brown to dark brown, fine, silty-clayey sand			5,10
			100%	0				12,14
								6,8
			75%	0				9,10
10								5,7
			100%	0	SAND: Interlayered lenses of coarse, white sand and fine, brown, silty-clayey sand			8,10
								4,6
			100%	5				5,7
					TD			
15								



HLA-ES

Project: BRAC NTC Orlando	**Site:** S.A. 17	**Boring No.:** OLD-17-06A
Client: SOUTHDIVNAVFACENGCOM		**Job No.:** CTO-107
Contractor: ABB-ES	**Date started:** 01/23/97	**Compltd:** 01/23/97
Method: Terra Probe	**Casing Size:** 0.5 in.	**Screen Int.:** 9 ft.
Protection level: D	**Ground Elev.:**	**Type of OVM.:**
Total depth: 11Ft.	**Dpth to ∇** Ft.	**Logged by:**
Well Development Date:	**Well ID:** OLD-17-06A	

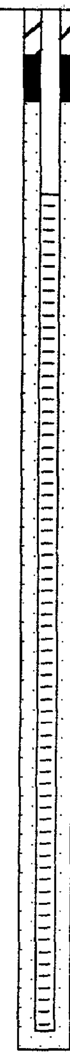
Depth Ft.	Sample ID (Depth) (Type)	Split Spoon	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.
					1/2-in. ID microwell was installed using TerraProbe.			
5								
10								
					TD			
15								



HLA-ES

Project: BRAC NTC Orlando	**Site:** S.A. 17	**Boring No.:** OLD-17-07A
Client: SOUTHDIVNAVFACENGCOM		**Job No.:** CTO-107
Contractor: ABB-ES	**Date started:** 01/23/97	**Compltd:** 01/23/97
Method: Terra Probe	**Casing Size:** 0.5 in.	**Screen Int.:** 9 ft.
Protection level: D	**Ground Elev.:**	**Type of OVM.:**
Total depth: 11Ft.	**Dpth to ⊽** Ft.	**Logged by:**
Well Development Date:	**Well ID:** OLD-17-07A	

Depth Ft.	Sample ID (Depth) (Type)	Split Spoon	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.
					1/2-in. ID microwell was installed using TerraProbe.			
5								
10								
					TD			
15								



HLA-ES

Project: BRAC NTC Orlando	**Site:** S.A. 17	**Boring No.:** OLD-17-08A
Client: SOUTHDIVNAVFACENGCOM		**Job No.:** CTO-107
Contractor: ABB-ES	**Date started:** 01/23/97	**Compltd:** 01/23/97
Method: Terra Probe	**Casing Size:** 0.5 in.	**Screen Int.:** 9 ft.
Protection level: D	**Ground Elev.:**	**Type of OVM.:**
Total depth: 11Ft.	**Dpth to ☿ Ft.**	**Logged by:**
Well Development Date:	**Well ID:** OLD-17-08A	

Depth Ft.	Sample ID (Depth) (Type)	Split Spoon	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.
					1/2-in. ID microwell was installed using TerraProbe.			
5								
10								
					TD			
15								

Project: BRAC NTC Orlando	**Site:** S.A. 17	**Boring No.:** OLD-17-09A
Client: SOUTHDIVNAVFACENGCOM		**Job No.:** CTO-107
Contractor: ABB-ES	**Date started:** 01/23/97	**Compltd:** 01/23/97
Method: Terra Probe	**Casing Size:** 0.5 in.	**Screen Int.:** 9 ft.
Protection level: D	**Ground Elev.:**	**Type of OVM:**
Total depth: 11Ft.	**Dpth to ∇** Ft.	**Logged by:**
Well Development Date:	**Well ID:** OLD-17-09A	

Depth Ft.	Sample ID (Depth) (Type)	Split Spoon	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.
					1/2-in. ID microwell was installed using TerraProbe.			
5								
10								
					TD			
15								

HLA-ES

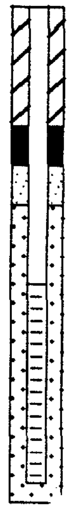
Project: BRAC NTC Orlando	**Site:** S.A. 17	**Boring No.:** OLD-17-10C
Client: SOUTHDIVNAVFACENGCOM		**Job No.:** CTO 107
Contractor: Custom	**Date started:** 02/04/97	**Compltd:** 02/04/97
Method: SPT	**Casing Size:** 2 in. / **Screen Int.:** 5 ft.	**Protection level:** D
Ground Elev.:	**Type of OVM.:** FID / **Total depth:** 80Ft.	**Dpth to ⊻** 8 Ft.
Logged by: JN	**Well Development Date:**	**Well ID:** OLD-17-10C

Depth Ft.	Sample ID (Depth) (Type)	Split Spoon	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.
					Begin sample collection at base of existing OLD-17-04 boring/well.			
5								
10								
			95%	0	Light gray silty fine sand, wet.		SP	7,7,8,5
			95%	0				4,4,3,2
15			10%	0				3,2,2,10
			60%	0				2,2,8,4
20			100%	0				2,2,5,5
			95%	0				8,8,2,1
			70%	0				1,1,1,2
25			100%	0	Light gray silty fine sand with clay, dry.		SP/SC	2,2,1,1
			90%	0				5,8,7,11
30			50%	0	Light gray silty fine sand, wet.		SP	4,4,8,7
			50%	0				2,4,8,8
			45%	0				5,4,5,10
35								

Project: BRAC NTC Orlando	**Site:** S.A. 17	**Boring No.:** OLD-17-10C
Client: SOUTHDIVNAVFACENGCOM		**Job No.:** CTO 107
Contractor: Custom	**Date started:** 02/04/97	**Compltd:** 02/04/97
Method: SPT	**Casing Size:** 2 in.	**Screen Int.:** 5 ft.
Protection level: D		
Ground Elev.:	**Type of OVM.:** FID	**Total depth:** 60Ft.
Dpth to ∇ 8 Ft.		
Logged by: JN	**Well Development Date:**	**Well ID:** OLD-17-10C

Continued from PAGE 1

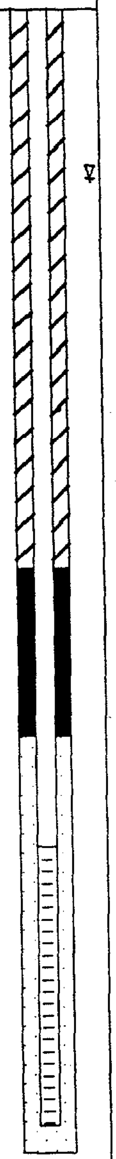
Depth Ft.	Sample ID (Depth) (Type)	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Soil class.	Blows/6-in.
		45%	0		SP	8,10,14,13
		60%	0			5,4,2,4
40		70%	0			5,4,5,5
		70%	0			8,8,7,4
		60%	0			NS
45		0	0			1,2,2,4
		100%	0	Dark gray wandy clay, soft, low plasticity, hard brown nodules after 3".	SC	1,0,0,1
		100%	0			NS
50		0				0,0,0,0
		100%				3,2,2,1
55		100%		Green silty clay, stiff, low plasticity (Hawthorne).	CL	8,10,13,13
		100%				2,3,4,8
		100%		Green silty clay.	CL/SC	
60				TD		
65						
70						



HLA-ES

Project: BRAC NTC Orlando	**Site:** S.A. 17	**Boring No.:** OLD-17-11B
Client: SOUTHDIVNAVFACENGCOM		**Job No.:** CTO 107
Contractor: GP	**Date started:** 04/28/98	**Compltd:** 04/28/98
Method: HSA	**Casing Size:** 2 in.	**Screen Int.:** 5 ft.
Protection level: D	**Ground Elev.:**	**Type of OVM.:** FID
Total depth: 20Ft.	**Dpth to ∇** 3 Ft.	**Logged by:** MCT
Well Development Date:	**Well ID:** OLD-17-11B	

Depth Ft.	Sample ID (Depth) (Type)	Split Spoon	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.
0					Posthole to 4 feet bls.			
4			80%	0	Brown, tan, gray, silty fine sand. Soft, loose.		SP	10,12,12,14
6			100%	0				5,12,12,14
8			100%	0				10,18,20,20
10			60%	0				8,8,10,10
12			60%	0				10,10,12,17
14			80%	0				8,17,12,12
16			90%	0				5,5,8,7
18			100%	0				5,7,7,8
20					TD			



HLA-ES

Project: BRAC NTC Orlando	**Site:** S.A. 17	**Boring No.:** OLD-17-12C
Client: SOUTHDIVNAVFACENGCOM		**Job No.:** CTO 107
Contractor: GP	**Date started:** 04/28/98	**Complfd:** 04/28/98
Method: HSA/MUD	**Casing Size:** 2 in.	**Screen Int.:** 5 ft.
Protection level: D		
Ground Elev.:	**Type of OVM.:** FID	**Total depth:** 84Ft.
Dpth to ▽ 3 Ft.		
Logged by: MCT	**Well Development Date:**	**Well ID:** OLD-17-12C

Depth Ft.	Sample ID (Depth) (Type)	Split Spoon	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.
					Posthole to 4 feet bls.			
5			80%	0	Brown, tan, gray, silty fine sand. Soft, loose.		SP	10,12,12,14
			100%	0				5,12,12,14
			100%	0				10,18,20,20
10			60%	0				8,8,10,10
			60%	0				10,10,12,17
15			80%	0				8,17,12,12
			90%	0				5,5,8,7
			100%	0				5,7,7,8
20			100%	0				8,8,7,7
			100%	0				4,4,3,3
25			100%	0	Light gray silty, clayey fine sand.		SP/SC	3,3,8,8
			100%	0				3,3,5,5
			100%	0				4,5,5,7
30			100%	0	Light gray silty fine sand. Stiff, partially cemented in places.		SP	3,3,4,4
			100%	0				4,5,8,8
35			100%	0				2,12,12,14

Project: BRAC NTC Orlando	**Site:** S.A. 17	**Boring No.:** OLD-17-13B
Client: SOUTHDIVNAVFACENGCOM		**Job No.:** CTO 107
Contractor: GP	**Date started:** 04/28/98	**Compltd:** 04/28/98
Method: HSA	**Casing Size:** 2 in.	**Screen Int.:** 5 ft.
Protection level: D	**Ground Elev.:**	**Type of OVM.:** FID
Total depth: 20Ft.	**Dpth to** ∇ 3 Ft.	**Logged by:** MCT
Well Development Date:	**Well ID:** OLD-17-13B	

Depth Ft.	Sample ID (Depth) (Type)	Split Spoon	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.
0					Posthole to 4 feet bls.			
4			50%	0	Gray to brown silty, fine-grained sand, Soft, loose, poorly sorted.		SP	28,32,20,21
6			100%	0				28,24,28,28
8			50%	0				12,12,14,14
10			90%	0				8,8,8,8
12			90%	0				8,8,5,5
14			80%	0				5,4,5,8
16			80%	0				5,5,5,5
18			60%	0				4,4,3,3
20					TD			

Project: BRAC NTC Orlando		**Site:** S.A. 17	**Boring No.:** OLD-17-14C
Client: SOUTHDIVNAVFACENGCOM			**Job No.:** CTO 107
Contractor: GP		**Date started:** 04/28/98	**Compltd:** 04/28/98
Method: HSA/MUD	**Casing Size:** 2 in.	**Screen Int.:** 5 ft.	**Protection level:** D
Ground Elev.:	**Type of OVM.:** FID	**Total depth:** 60Ft.	**Dpth to ∇** 3 Ft.
Logged by: MCT	**Well Development Date:**		**Well ID:** OLD-17-14C

Depth Ft.	Sample ID (Depth) (Type)	Split Spoon	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.
0					Posthole to 4 feet bls.			
4			50%	0	Brown, tan, gray, silty fine sand. Soft, loose.		SP	28,32,20,21
6			100%	0				28,24,28,28
8			50%	0				12,12,14,14
10			90%	0				8,8,8,8
12			90%	0				8,8,5,5
14			80%	0				5,4,5,8
16			80%	0				5,5,5,5
18			60%	0				4,4,3,3
20			60%	0				3,3,3,3
22			70%	0				3,3,2,2
24			80%	0				1,1,2,2
26			70%	0				3,3,3,2
28			70%	0				4,3,10,10
30			50%	0				3,3,3,3
32			80%	0	Olive green clayey, silty sand.		SC	5,8,20,20
34			40%	0	Light brown silty fine sand with stringers of olive green silty fine- to coarse sand.		SP	8,10,10,11
35								

Project: BRAC NTC Orlando		**Site:** S.A. 17	**Boring No.:** OLD-17-14C
Client: SOUTHDIVNAVFACENGCOM			**Job No.:** CTO 107
Contractor: GP		**Date started:** 04/28/98	**Compltd:** 04/28/98
Method: HSA/MUD	**Casing Size:** 2 in.	**Screen Int.:** 5 ft.	**Protection level:** D
Ground Elev.:	**Type of OVM.:** FID	**Total depth:** 60Ft.	**Dpth to** ∇ 3 Ft.
Logged by: MCT	**Well Development Date:**		**Well ID:** OLD-17-14C

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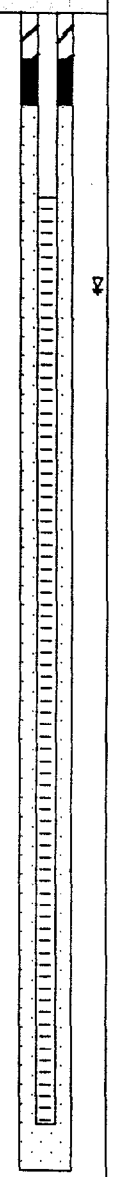
Depth Ft.	Sample ID (Depth) (Type)	Split Spoon / Recovery	Headspace (ppm)	Soil/Rock Description and comments	Soil class.	Blows/6-in.
35		40%	0		SP	7,8,9,8
		40%	0			5,5,5,5
		70%	0			3,2,8,8
40		90%	0			8,8,7,1
		70%	0			7,7,8,7
45		60%	0			5,8,8,5
		70%	0			3,5,5,7
		80%	0	Olive green clayey, silty fine sand.		1,1,1,1
50		80%	0			2,1,3,3
		80%	0			1,2,1,1
55		80%	0			2,1,8,10
		80%	0	Dark green silty, sandy clay. Dry, soft, low plasticity.	SP/SC	10,11,10,11
		80%				
60				TD		
65						
70						

HLA-ES

Project: BRAC NTC Orlando	**Site:** S.A. 17	**Boring No.:** OLD-17-15A
Client: SOUTHDIVNAVFACENGCOM		**Job No.:** CTO 107
Contractor: GP	**Date started:** 04/28/98	**Compltd:** 04/28/98
Method: HSA	**Casing Size:** 2 in.	**Screen Int.:** 10 ft.
Protection level: D	**Ground Elev.:**	**Type of OVM.:** FID
Total depth: 12.5Ft.	**Dpth to ⊽** 3 Ft.	**Logged by:** MCT
Well Development Date:		**Well ID:** OLD-17-15A

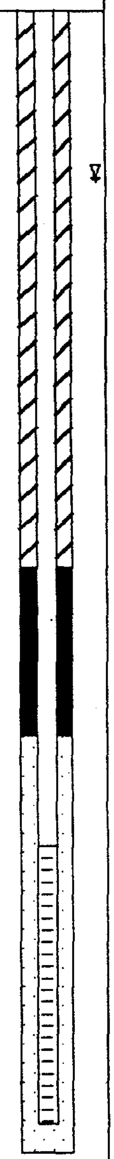
Depth Ft.	Sample ID (Depth) (Type)	Split Spoon	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.
					Posthole to 4 feet bls.			
				0				12,12,12,14
			80%		Light brown, silty, fine-grained sand. Soft, loose, poorly sorted.		SP	
5								
				0				10,10,8,8
			80%					
				0				10,10,10,10
			100%					
10				0				3,3,3,3
			90%					
					TD			
15								



HLA-ES

Project: BRAC NTC Orlando	**Site:** S.A. 17	**Boring No.:** OLD-17-16B
Client: SOUTHDIVNAVFACENGCOM		**Job No.:** CTO 107
Contractor: GP	**Date started:** 04/29/98	**Compltd:** 04/29/98
Method: HSA	**Casing Size:** 2 in.	**Screen Int.:** 5 ft.
Protection level: D		
Ground Elev.:	**Type of OVM.:** FID	**Total depth:** 20.5Ft.
Dpth to ☰ 3 Ft.		
Logged by: MCT	**Well Development Date:**	**Well ID:** OLD-17-16b

Depth Ft.	Sample ID (Depth) (Type)	Split Spoon	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.
0–4					Posthole to 4 feet bls.			
4–6			80%	0	Light brown, silty, fine-grained sand. Soft, loose, poorly sorted.		SP	12,12,12,14
6–8			80%	0				10,10,8,8
8–10			100%	0				10,10,10,10
10–12			90%	0				3,3,3,3
12–14			80%	0				3,3,3,3
14–16			90%	0				1,1,3,3
16–18			100%	0				4,6,4,5
18–20			90%	0				5,5,5,5
20.5					TD			



HLA-ES

Project: BRAC NTC Orlando	**Site:** S.A. 17		**Boring No.:** OLD-17-17C
Client: SOUTHDIVNAVFACENGCOM			**Job No.:** CTO 107
Contractor: GP		**Date started:** 04/29/98	**Compltd:** 04/29/98
Method: HSA/MUD	**Casing Size:** 2 in.	**Screen Int.:** 5 ft.	**Protection level:** D
Ground Elev.:	**Type of OVM.:** FID	**Total depth:** 58Ft.	**Dpth to ▽** 3 Ft.
Logged by: MCT	**Well Development Date:**		**Well ID:** OLD-17-17C

Depth Ft.	Sample ID (Depth) (Type)	Split Spoon	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.
0–4					Posthole to 4 feet bls.			
4–6			80%	0	Light brown, silty, fine-grained sand. Soft, loose, poorly sorted.		SP	12,12,12,14
6–8			80%	0				10,10,8,8
8–10			100%	0				10,10,10,10
10–12			90%	0				3,3,3,3
12–14			80%	0				3,3,3,3
14–16			90%	0				1,1,3,3
16–18			100%	0				4,6,4,5
18–20			90%	0				5,5,5,5
20–22			100%	0				3,3,1,1
22–24			100%	0				1,1,1,1
24–26			100%	0				1,1,1,2
26–28			80%	0	As above, with interbedded layers of light green sandy silt.		SP/SC	6,6,7,7
28–30			90%	0				7,8,9,9
30				0			SP	2,2,7,8

HLA-ES

Project: BRAC NTC Orlando	**Site:** S.A. 17	**Boring No.:** OLD-17-17C
Client: SOUTHDIVNAVFACENGCOM		**Job No.:** CTO 107
Contractor: GP	**Date started:** 04/29/98	**Compltd:** 04/29/98
Method: HSA/MUD — **Casing Size:** 2 in.	**Screen Int.:** 5 ft.	**Protection level:** D
Ground Elev.: — **Type of OVM.:** FID	**Total depth:** 58Ft.	**Dpth to ▽** 3 Ft.
Logged by: MCT — **Well Development Date:**		**Well ID:** OLD-17-17C

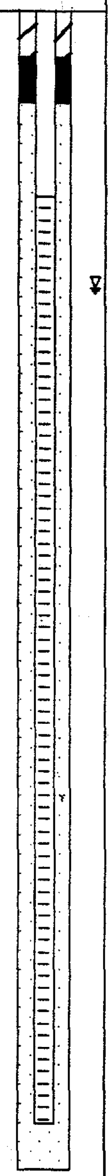
Continued from PAGE 1

Depth Ft.	Sample ID (Depth) (Type)	Split Spoon	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Soil class.	Blows/6-in.
			40%	0	Light brown, silty, fine-grained sand. Slightly cemented with iron staining.	SP	8,10,10,12
			50%	0			8,8,8,8
35			80%	0			2,3,4,5
			80%	0			2,4,4,4
40			80%	0	Above grades into light green clayey, silty, fine- to coarse-grained sand with phosphate nodules.	SP/SC	1,1,1,5
			25%	0			9,9,9,14
			50%	0			5,5,5,5
45			75%	0			4,5,5,4
			80%	0			2,2,3,3
50			90%	0			5,3,2,1
			80%	0			1,1,1,1
			80%	0		CL	1,1,3,8
55			80%	0	Light green silt/clay/sand.	SP/SC	3,8,7,9
			80%				
60					TD		

HLA-ES

Project: BRAC NTC Orlando	**Site:** S.A. 17	**Boring No.:** OLD-17-18A
Client: SOUTHDIVNAVFACENGCOM		**Job No.:** CTO 107
Contractor: GP	**Date started:** 04/30/98	**Compltd:** 04/30/98
Method: HSA	**Casing Size:** 2 in.	**Screen Int.:** 10 ft.
Protection level: D		
Ground Elev.:	**Type of OVM.:** FID	**Total depth:** 12Ft.
Dpth to ⊻ 3 Ft.		
Logged by: MCT	**Well Development Date:**	**Well ID:** OLD-17-18A

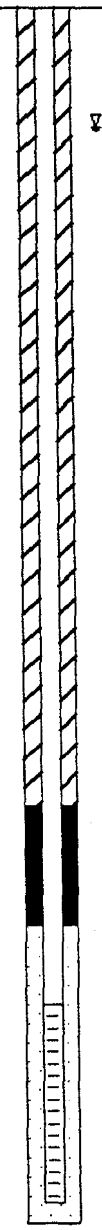
Depth Ft.	Sample ID (Depth) (Type)	Split Spoon	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.
					Posthole to 4 feet bls.			
4			30%	NA*	Light brown, gray, silty fine-grained sand. Soft, loose, poorly sorted.		SP	8,8,10,10
5								
6			100%	NA				7,7,7,7
8			100%	NA				10,11,18,20
10			70%	NA				8,10,12,18
12					TD			
15					* FID out of order			



HLA-ES

Project: BRAC NTC Orlando	**Site:** S.A. 17	**Boring No.:** OLD-17-19B
Client: SOUTHDIVNAVFACENGCOM		**Job No.:** CTO 107
Contractor: GP	**Date started:** 05/01/98	**Compltd:** 05/01/98
Method: HSA	**Casing Size:** 2 in. / **Screen Int.:** 5 ft.	**Protection level:** D
Ground Elev.:	**Type of OVM.:** FID / **Total depth:** 30Ft.	**Dpth to ▽** 3 Ft.
Logged by: MCT	**Well Development Date:**	**Well ID:** OLD-17-19B

Depth Ft.	Sample ID (Depth) (Type)	Split Spoon	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.
0–4					Posthole to 4 feet bls.			
4–6			30%	NA*	Light brown, gray, silty fine-grained sand. Soft, loose, poorly sorted.		SP	8,8,10,10
6–8			100%	NA				7,7,7,7
8–10			100%	NA				10,11,18,20
10–12			70%	NA				8,10,12,18
12–14			80%	NA				10,7,8,10
14–16			100%	NA				10,8,8,10
16–18			100%	NA				8,3,3,4
18–20			100%	NA				8,3,5,4
20–22			100%	NA	Brown sandy silt, soft.		SC	8,5,5,4
22–24			80%	NA	Light brown silty sand.		SP	2,3,6,8
24–26			90%	NA				7,7,10,12
26–28			100%	NA				8,8,7,8
28–30			100%	0	Brown sandy silt.		SC	7,5,8,8
30					TD			



* FID out of order

HLA-ES

Project: BRAC NTC Orlando	**Site:** S.A. 17		**Boring No.:** OLD-17-20C
Client: SOUTHDIVNAVFACENGCOM			**Job No.:** CTO 107
Contractor: GP		**Date started:** 05/01/98	**Compltd:** 05/01/98
Method: HSA/MUD	**Casing Size:** 2 in.	**Screen Int.:** 5 ft.	**Protection level:** D
Ground Elev.:	**Type of OVM.:** FID	**Total depth:** 82Ft.	**Dpth to ∇** 3 Ft.
Logged by: MCT	**Well Development Date:**		**Well ID:** OLD-17-20C

Depth Ft.	Sample ID (Depth) (Type)	Split Spoon	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.
					Posthole to 4 feet bls.			
				NA*	Light brown, gray, silty fine-grained sand. Soft, loose, poorly sorted.		SP	8,8,10,10
5			30%					
				NA				7,7,7,7
			100%					
				NA				10,11,18,20
			100%					
10				NA				8,10,12,18
			70%					
				NA				10,7,8,10
			80%					
				NA				10,6,8,10
15			100%					
				NA				8,3,3,4
			100%					
				NA				8,3,5,4
			100%					
20				NA	Brown sandy silt, soft.		SC	8,5,5,4
			100%					
				NA				2,3,6,8
			80%		Light brown silty sand.		SP	
				NA				7,7,10,12
25			90%					
				NA				6,6,7,8
			100%					
				0	Brown sandy silt.		SC	7,5,6,6
			100%					
30				1.1				2,1,1,2
			100%		Light brown silty, fine-grained sand with interbedded olive green silty sand, soft, stiff in places.		SP	
				0.8				1,4,8,9
			100%					
				0.8				8,10,10,14
35			100%					

Project: BRAC NTC Orlando	Site: S.A. 17	Boring No.: OLD-17-20C
Client: SOUTHDIVNAVFACENGCOM		Job No.: CTO 107
Contractor: GP	Date started: 05/01/98	Compltd: 05/01/98
Method: HSA/MUD	Casing Size: 2 in.	Screen Int.: 5 ft.
Protection level: D	Ground Elev.:	Type of OVM.: FID
Total depth: 62Ft.	Dpth to ▽ 3 Ft.	Logged by: MCT
Well Development Date:	Well ID: OLD-17-20C	

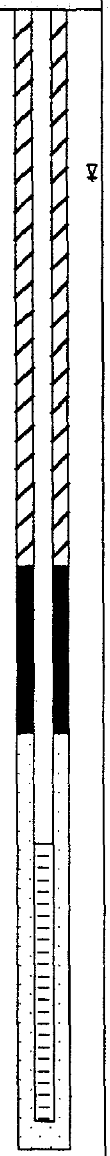
Continued from PAGE 1

Depth Ft.	Sample ID (Depth) (Type)	Split Spoon	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.
			100%	0.4			SP	6,8,11,17
			100%	0.4				12,14,18,16
			80%	0				5,6,8,8
40			30%	0				6,8,10,10
			50%	0				7,8,15,12
45			50%	0				7,6,10,18
			60%	0				4,3,1,6
			60%	0				1,1,1,1
50			100%	0	Dark green clayey silt with sand. Soft, wet.		SC	2,1,2,1
			100%	0				1,2,2,3
55			100%	0				1,2,3,1
			100%	0	(Hawthorn)			1,2,1,2
			100%	0	Dark green clay. Soft, wet, low plasticity.		CL	1,2,1,1
60			100%					
					TD			
65								
70					* FID out of order			

HLA-ES

Project: BRAC NTC Orlando	**Site:** S.A. 17	**Boring No.:** OLD-17-21B
Client: SOUTHDIVNAVFACENGCOM		**Job No.:** CTO 107
Contractor: GP	**Date started:** 05/05/98	**Compltd:** 05/05/98
Method: HSA	**Casing Size:** 2 in.	**Screen Int.:** 5 ft.
Protection level: D		
Ground Elev.:	**Type of OVM.:** FID	**Total depth:** 20.5Ft.
Dpth to ⊻ 3 Ft.		
Logged by: MCT	**Well Development Date:**	**Well ID:** OLD-17-21B

Depth Ft.	Sample ID (Depth) (Type)	Split Spoon	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.
					Posthole to 4 feet bls.			
5			90%	0	Brown, gray, silty, fine-grained sand. Soft, loose, poorly sorted.		SP	6,10,10,12
			90%	0				7,10,12,12
			90%	0				8,10,12,14
10			90%	0				6,6,8,6
			90%	0				6,5,4,4
15			100%	0				4,6,4,5
			90%	0				3,5,4,5
			90%	0				3,6,8,9
20								
					TD			
25								



HLA-ES

Project: BRAC NTC Orlando	**Site:** S.A. 17	**Boring No.:** OLD-17-22C
Client: SOUTHDIVNAVFACENGCOM		**Job No.:** CTO 107
Contractor: GP	**Date started:** 05/04/98	**Compltd:** 05/04/98
Method: HSA/MUD	**Casing Size:** 2 in.	**Screen Int.:** 5 ft.
Protection level: D	**Ground Elev.:**	**Type of OVM.:** FID
Total depth: 60Ft.	**Dpth to ∇** 3 Ft.	**Logged by:** MCT
Well Development Date:	**Well ID:** OLD-17-22C	

Depth Ft.	Sample ID (Depth) (Type)	Split Spoon	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.
0–4					Posthole to 4 feet bls.			
4–6			90%	0	Brown, gray, silty, fine-grained sand. Soft, loose, poorly sorted.		SP	6,10,10,12
6–8			90%	0				7,10,12,12
8–10			90%	0				8,10,12,14
10–12			90%	0				6,6,8,6
12–14			90%	0				6,5,4,4
14–16			100%	0				4,6,4,5
16–18			90%	0				3,5,4,5
18–20			90%	0				3,6,8,9
20–22			90%	0				3,5,4,4
22–24			90%	0				2,2,2,2
24–26			90%	0				1,1,2,2
26–28			90%	0	As above, with interbedded layers of light green sandy silt.		SP/SC	1,2,2,3
28–30			60%	0				2,2,2,3
30–32			60%	0	Light brown silty, fine-grained sand, slightly cemented with iron staining.		SP	1,3,4,8
32–34			60%	0				1,3,4,8
34–35			60%	0				4,8,8,9

Project: BRAC NTC Orlando	**Site:** S.A. 17		**Boring No.:** OLD-17-22C
Client: SOUTHDIVNAVFACENGCOM			**Job No.:** CTO 107
Contractor: GP		**Date started:** 05/04/98	**Compltd:** 05/04/98
Method: HSA/MUD	**Casing Size:** 2 in.	**Screen Int.:** 5 ft.	**Protection level:** D
Ground Elev.:	**Type of OVM.:** FID	**Total depth:** 60Ft.	**Dpth to ∇** 3 Ft.
Logged by: MCT	**Well Development Date:**		**Well ID:** OLD-17-22C

Continued from PAGE 1

Split Spoon Recovery	Headspace (ppm)	Blows/6-in.
60%		
60%	0	2,5,10,12
80%	0	3,6,3,3
70%	0	2,1,2,2
70%	0	1,2,3,5
80%	0	1,1,2,2
NA		No Recovery
80%	0	1,2,2,3
NA		No Recovery
80%	0	1,1,1,1
90%	0	2,2,3,2
90%	0	2,3,5,10
70%	0	3,3,5,7

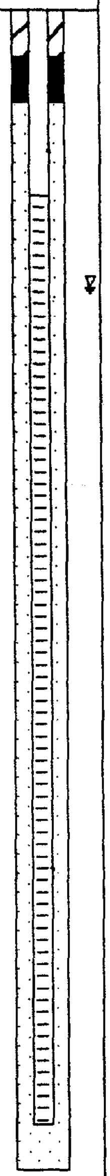
Soil/Rock Description and comments	Soil class.
	SP
Above grades into light green clayey, silty, fine-grained sand.	SP/SC
Alternating layers of dark green silty clay and clayey silt. Clay moderately stiff, low plasticity.	SC/CL
Light green clay/silt/sand.	SC
TD	

Depth Ft.: 40, 45, 50, 55, 60, 65, 70

HLA-ES

Project: BRAC NTC Orlando	**Site:** S.A. 17	**Boring No.:** OLD-17-23A
Client: SOUTHDIVNAVFACENGCOM		**Job No.:** CTO 107
Contractor: GP	**Date started:** 05/05/98	**Compltd:** 05/05/98
Method: HSA	**Casing Size:** 2 in. / **Screen Int.:** 10 ft.	**Protection level:** D
Ground Elev.:	**Type of OVM.:** FID / **Total depth:** 12.5Ft.	**Dpth to ⊻** 3 Ft.
Logged by: MCT	**Well Development Date:**	**Well ID:** OLD-17-23A

Depth Ft.	Sample ID (Depth) (Type)	Split Spoon	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.
					Refer to CPT log for 17Q016.			
					Log used to determine well construction.			
5								
10								
					TD			
15								

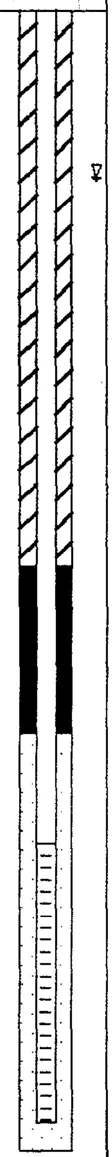


HLA-ES

Project: BRAC NTC Orlando	**Site:** S.A. 17	**Boring No.:** OLD-17-24B
Client: SOUTHDIVNAVFACENGCOM		**Job No.:** CTO 107
Contractor: GP	**Date started:** 05/05/98	**Compltd:** 05/05/98

Method: HSA	**Casing Size:** 2 in.	**Screen Int.:** 5 ft.	**Protection level:** D
Ground Elev.:	**Type of OVM.:** FID	**Total depth:** 20Ft.	**Dpth to ▽** 3 Ft.
Logged by: MCT	**Well Development Date:**		**Well ID:** OLD-17-24B

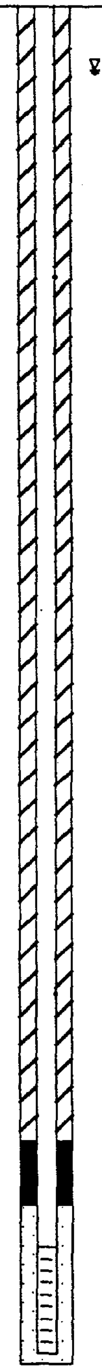
Depth Ft.	Sample ID (Depth) (Type)	Split Spoon	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.
					Refer to CPT log for 17Q018.			
					Log used to determine well construction.			
5								
10								
15								
20					TD			
25								



HLA-ES

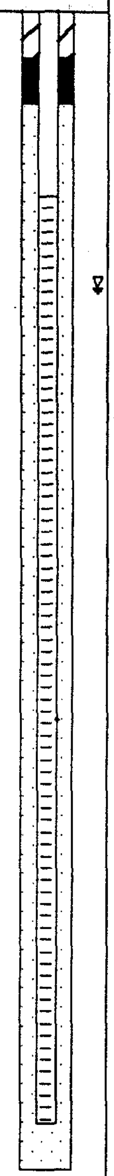
Project: BRAC NTC Orlando	**Site:** S.A. 17	**Boring No.:** OLD-17-25C
Client: SOUTHDIVNAVFACENGCOM		**Job No.:** CTO 107
Contractor: GP	**Date started:** 05/07/98	**Compltd:** 05/07/98
Method: HSA/MUD	**Casing Size:** 2 in. / **Screen Int.:** 5 ft.	**Protection level:** D
Ground Elev.:	**Type of OVM.:** FID / **Total depth:** 83Ft.	**Dpth to ⊽** 3 Ft.
Logged by: MCT	**Well Development Date:**	**Well ID:** OLD-17-25c

Depth Ft.	Sample ID (Depth) (Type)	Split Spoon	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.
					Refer to CPT log for 17Q01B.			
					Log used to determine well construction.			
5								
10								
15								
20								
25								
30								
35								
40								
45								
50								
55								
60								
					TD			
65								



Project: BRAC NTC Orlando	**Site:** S.A. 17	**Boring No.:** OLD-17-26A
Client: SOUTHDIVNAVFACENGCOM		**Job No.:** CTO 107
Contractor: GP	**Date started:** 05/05/98	**Compltd:** 05/05/98
Method: HSA	**Casing Size:** 2 in.	**Screen Int.:** 10 ft.	**Protection level:** D
Ground Elev.:	**Type of OVM.:** FID	**Total depth:** 12.5Ft.	**Dpth to ∇** 3 Ft.
Logged by: MCT	**Well Development Date:**		**Well ID:** OLD-17-26A

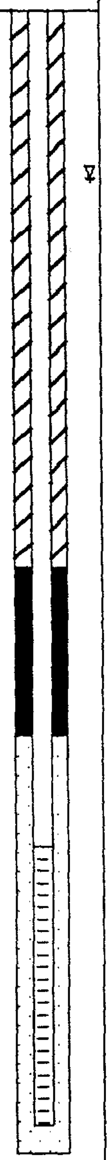
Depth Ft.	Sample ID (Depth) (Type)	Split Spoon	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.
					Refer to CPT log for 17G003.			
					Log used to determine well construction.			
5								
10								
					TD			
15								



HLA-ES

Project: BRAC NTC Orlando	**Site:** S.A. 17	**Boring No.:** OLD-17-27B
Client: SOUTHDIVNAVFACENGCOM		**Job No.:** CTO 107
Contractor: GP	**Date started:** 05/05/98	**Compltd:** 05/05/98
Method: HSA	**Casing Size:** 2 in.	**Screen Int.:** 5 ft.
Protection level: D		
Ground Elev.:	**Type of OVM.:** FID	**Total depth:** 20.5Ft.
Dpth to ▽ 3 Ft.		
Logged by: MCT	**Well Development Date:**	**Well ID:** OLD-17-27B

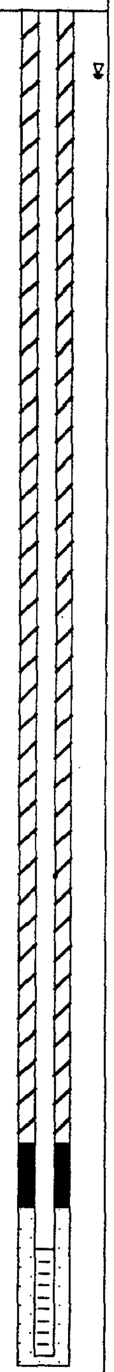
Depth Ft.	Sample ID (Depth) (Type)	Split Spoon	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.
					Refer to CPT log for 17Q003.			
					Log used to determine well construction.			
5								
10								
15								
20					TD			
25								



HLA-ES

Project: BRAC NTC Orlando	**Site:** S.A. 17	**Boring No.:** OLD-17-28C
Client: SOUTHDIVNAVFACENGCOM		**Job No.:** CTO 107
Contractor: GP	**Date started:** 05/07/98	**Compltd:** 05/07/98
Method: HSA/MUD	**Casing Size:** 2 in. / **Screen Int.:** 5 ft.	**Protection level:** D
Ground Elev.:	**Type of OVM.:** FID / **Total depth:** 63Ft.	**Dpth to ∇** 3 Ft.
Logged by: MCT	**Well Development Date:**	**Well ID:** OLD-17-28C

Depth Ft.	Sample ID (Depth) (Type)	Split Spoon	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.
					Refer to CPT log for 17Q003.			
					Log used to determine well construction.			
5								
10								
15								
20								
25								
30								
35								
40								
45								
50								
55								
60								
65					TD			



HLA-ES

WELL DEVELOPMENT RECORD

Project: SITE SCREENING S.A. 17 NTC ORLANDO	Well Installation Date:		Project No. CTO 107
Client: SOUTH DIVNAVFACENGCOM	Well Development Date: 5/25/95	Logged by: GRIETENS HUFFMAN	Checked by: GBG
Well/Site I.D.: OLD-17-01	Weather: NOT RECORDED	Start Date: 5/25/95	Finish Date: 5/25/95
Volume of Drilling Fluid Lost (gal.) N/A	Volume of Water in Well and Filter Pack (gal.) 4.3	Start Time: 07:43	Finish Time: 09:05

Installed Depth From Top of Well Casing to Bottom of Well:

Initial Depth to Water (ft.) 4.80

Initial Depth to Well Bottom: 12.62

Water Level during Initial Pumping/Purging (ft): NOT RECORDED

Water Level at Termination of Pumping/Purging (ft): 5.02

Depth to well Bottom at termination of Pumping/Purging (ft.) NOT RECORDED

BEGINNING OF WELL DEVELOPMENT

Time	Temp.	pH	Conductivity	Turbidity	Other	Approximate Pumping Rate (gal/min)
08:11	25.1	6.59	730.	179.8	20.gal.	.5
08:21	26.0	6.65	730.	30.6	25	.5
08:31	25.5	6.69	710.	10.3	30	.5
08:41	26.0	6.69	710.	7.3	35	.5
08:51	26.0	6.69	700.	5.3	40	.5
09:01	26.0	6.69	710.	4.8	45	.5

END OF WELL DEVELOPMENT

NOTES: (Include physical character of removed water, type and size of pump, volume of water removed.)

USED PARASTALTIC PUMP SD# 889639. PUMPED ≈ 45 gal. WATER CLEAR.

Well Developer's Signature [signature]

9312005S L 6

WELL DEVELOPMENT RECORD

Project: SITE SCREENING S.A. 17 NTC ORLANDO	Well Installation Date:		Project No. CTO 107
Client: SOUTHDIVNAVFACENGCOM	Well Development Date: 5/24/95	Logged by: GRIFFITHS HUFFMAN	Checked by: GBG
Well/Site I.D.: OLD-17-02	Weather: CLEAR & 80°	Start Date: 5/24/95	Finish Date: 5/24/95
Volume of Drilling Fluid Lost (gal.) N/A	Volume of Water in Well and Filter Pack (gal.) 4.7	Start Time: 13:08	Finish Time: 14:32

Installed Depth From Top of Well Casing to Bottom of Well:

Initial Depth to Water (ft.) 4.25

Initial Depth to Well Bottom: 12.71

Water Level during Initial Pumping/Purging (ft): NOT RECORDED

Water Level at Termination of Pumping/Purging (ft): 4.41

Depth to well Bottom at termination of Pumping/Purging (ft.) NOT RECORDED

BEGINNING OF WELL DEVELOPMENT

Time	Temp.	pH	Conductivity	Turbidity	Other	Approximate Pumping Rate (gal/min)
13:45	28.0	6.70	479.	33.6	20gal.	.5
13:55	28.0	6.60	470.	5.5	25	.5
14:00	28.5	6.71	460.	7.3	30	.5
14:10	28.5	6.77	461.	5.8	35	.5
14:20	29.5	6.79	461.	2.9	40	.5
14:30	29.0	6.83	461.	2.7	45	.5

END OF WELL DEVELOPMENT

NOTES: (Include physical character of removed water, type and size of pump, volume of water removed.)

USED PERISTALTIC PUMP SD# 889519. PUMPED ≈ 45gal.

Well Developer's Signature [signature]

9312005S L 6

WELL DEVELOPMENT RECORD

Project: SITE SCREENING S.A. 17 NTC ORLANDO	Well Installation Date:		Project No. CTO 107
Client: SOUTHDIVNAVFACENGCOM	Well Development Date: 5/24/95	Logged by: GRIETENS HUFFMAN	Checked by: GBG
Well/Site I.D.: OLD-17-03	Weather: NOT RECORDED	Start Date: 5/24/95	Finish Date: 5/24/95
Volume of Drilling Fluid Lost (gal.) N/A	Volume of Water in Well and Filter Pack (gal.) 4.6	Start Time: 11:25	Finish Time: 12:50

Installed Depth From Top of Well Casing to Bottom of Well:

Initial Depth to Water (ft.) 3.98

Initial Depth to Well Bottom: 12.42

Water Level during Initial Pumping/Purging (ft): CLEAR AND ≈80°

Water Level at Termination of Pumping/Purging (ft): 5.91

Depth to well Bottom at termination of Pumping/Purging (ft.) NOT RECORDED

BEGINNING OF WELL DEVELOPMENT

Time	Temp.	pH	Conductivity	Turbidity	Other	Approximate Pumping Rate (gal/min)
12:07	25.0	5.87	209.	181.4	30gal.	.5
12:17	24.5	6.03	202.	181.9	35gal.	.5
12:27	24.5	6.12	201.	182.7	40gal.	.5
12:37	24.8	6.04	209.	181.4	45gal.	.5
12:47	25.0	5.90	202.	182.2	50gal.	.5

END OF WELL DEVELOPMENT

NOTES: (Include physical character of removed water, type and size of pump, volume of water removed.)

PERASTALTIC PUMP SD# 889639, WATER HAS ODOR AND IS CLOUDY.

Well Developer's Signature

WELL DEVELOPMENT RECORD

Project: SITE SCREENING S.A. 17 NTC ORLANDO	Well Installation Date:		Project No. CTO107
Client: SOUTHDIVNAVFACENGCOM	Well Development Date: 5/24/95	Logged by: GRISTENS HUFFMAN	Checked by: GBG
Well/Site I.D.: OLD-17-04	Weather: CLEAR, ≈ 80°	Start Date: 5/24/95	Finish Date: 5/24/95
Volume of Drilling Fluid Lost (gal.) N/A	Volume of Water in Well and Filter Pack (gal.) 5.1	Start Time: 11:16	Finish Time: 13:55

Installed Depth From Top of Well Casing to Bottom of Well:

Initial Depth to Water (ft.) 3.28

Initial Depth to Well Bottom: 12.64

Water Level during Initial Pumping/Purging (ft): NOT RECORDED

Water Level at Termination of Pumping/Purging (ft): 3.49

Depth to well Bottom at termination of Pumping/Purging (ft.) NOT RECORDED

BEGINNING OF WELL DEVELOPMENT

Time	Temp.	pH	Conductivity	Turbidity	Other	Approximate Pumping Rate (gal/min)
13:04	22.0	6.75	312.	73.2	60 gal	.5
13:14	22.3	6.70	318.	34.4	65 gal	.5
13:24	22.3	6.75	316.	25.5	70 gal.	.5
13:34	22.4	6.71	318.	22.2	75 gal	.5
13:43	22.4	6.66	318.	25.9	80 gal.	.5
13:53	22.0	6.72	312.	17.6	85 gal.	.5

END OF WELL DEVELOPMENT

NOTES: (Include physical character of removed water, type and size of pump, volume of water removed.)

USED PARISTALTIC PUMP SD# 889519, PUMPED 85 gallons.
WATER WAS CLOUDY, CLEARED UP, SLIGHT ODOR.

Well Developer's Signature [signature]

9312005S L 6

WELL DEVELOPMENT RECORD

Project: SITE SCREENING S.A. 17 NTC ORLANDO	Well Installation Date:		Project No. CTO107
Client: SOUTHDIVNAVFACENGCOM	Well Development Date: 5/25/95	Logged by: GRIETENS HUFFMAN	Checked by: 4BG
Well/Site I.D.: OLD-17-05	Weather: NOT RECORDED	Start Date: 5/25/95	Finish Date: 5/25/95
Volume of Drilling Fluid Lost (gal.)	Volume of Water in Well and Filter Pack (gal.) 5.3	Start Time: 07:31	Finish Time: 09:41

Installed Depth From Top of Well Casing to Bottom of Well:

Initial Depth to Water (ft.) 3.33

Initial Depth to Well Bottom: 12.90

Water Level during Initial Pumping/Purging (ft): NOT RECORDED

Water Level at Termination of Pumping/Purging (ft): 4.00

Depth to well Bottom at termination of Pumping/Purging (ft.) NOT RECORDED

BEGINNING OF WELL DEVELOPMENT

Time	Temp.	pH	Conductivity	Turbidity	Other	Approximate Pumping Rate (gal/min)
08:50	22.5	6.66	318.	50.6	50 ga.	.5
09:00	25.8	6.59	308.	135.4	55	.5
09:10	25.0	6.66	312.	198.2	60	.5
09:20	25.2	6.61	311.	117.9	65	.5
09:30	25.5	6.58	309.	76.6	70	.5
09:40	26.0	6.61	306.	102.2	75	.5

END OF WELL DEVELOPMENT

NOTES: (Include physical character of removed water, type and size of pump, volume of water removed.)

USED PERISTALTIC PUMP SD# 889639. PUMPED ABOUT 75 gallons. WATER CLOUDY.

Well Developer's Signature [signature]

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WELL DEVELOPMENT RECORD

Project: NTC-ORLANDO	Well Installation Date and Time: 2/5/97		Project No. 2530.03
Client: SOUTHDIV	Well Development Date and Time: 2/6/97 / 1000	Logged by: PGH	Checked by: PGH
Well/Site I.D.: OLD-17-10C	Weather: CLEAR / WARM (~70°)	Start Date: 2/6/97	Finish Date: 2/6/97
Volume of Drilling Fluid Lost (gal.) NONE	Volume of Water in Well and Filter Pack (gal.) 16 GALS	Start Time: 1300	Finish Time: 1520

Installed Depth From Top of Well Casing to Bottom of Well: 47.5'

Initial Depth to Water (ft): 5.42 | Initial Depth to Well Bottom: 47.8

Water Level during Initial Pumping/Purging (ft): NA

Depth to Water at Termination of Pumping/Purging (ft): NA | Depth to Well Bottom at Termination of Pumping/Purging (ft): NA

	TIME	TEMP (°C)	pH	Conductivity	Approximate Pumping Rate (gal/min)	TURB.
BEGINNING OF WELL DEVELOPMENT	1335	34	5.89	200	~3	>200
	1350	28	6.06	220	SAME	>200
	1405	26	5.71	197	SAME	>200
	1430	25	5.59	269	SAME	>200
	1445	26	5.56	269	"	>200
END OF WELL DEVELOPMENT	1455	28	5.54	260	"	>200

NOTES: (Include physical character of removed water, type & size of pump, volume of water removed.)

WATER REMAINED CLOUDY (HIGH TURBIDITY THROUGHOUT); DEVELOPED W/ GRUNDFOS SUBMERSIBLE PUMP; REMOVED ~105 GALLONS.

Well Developer's Signature [signature]

WELL DEVELOPMENT RECORD

Project: NTC ORLANDO	Well Installation Date and Time: OLD-17-11B 4/28/98 0845		Project No. 02530.05
Client: NAVY	Well Development Date and Time: 5/12/98 1150	Logged by: G Mudd	Checked by: Mark Tolan
Well/Site I.D.: OLD-17-11B	Weather: hazy, hot, humid	Start Date: 5/12/98	Finish Date: 5/12/98
Volume of Drilling Fluid Lost (gal.) 0	Volume of Water in Well and Filter Pack (gal.) 3.0	Start Time: 1150	Finish Time: 1330

Installed Depth From Top of Well Casing to Bottom of Well: 20'

Initial Depth to Water (ft): 9.40

Initial Depth to Well Bottom: 19.8'

Water Level during Initial Pumping/Purging (ft): 9.40

Depth to Water at Termination of Pumping/Purging (ft): 9.8'

Depth to Well Bottom at Termination of Pumping/Purging (ft): 19.8'

	TIME	TEMP.	pH	Conductivity	Approximate Pumping Rate (gal/min)
BEGINNING OF WELL DEVELOPMENT	1210	31°c	7.04	460	1 gal/min
	1230	34.6	7.08	370	1
	1300	32.0	7.10	270	0.2
	1310	33.0	7.10	240	0.2
	1320	33.0	7.12	240	0.2
END OF WELL DEVELOPMENT	1330	33.0	7.10	238	0.2

NOTES: (Include physical character of removed water, type & size of pump, volume of water removed.)

Water is turbid, brown in color. Honda centrifugal pump (1/2 Hp).
Removed ≈ 20 gallons

Well Developer's Signature Mark C Tolan

WELL DEVELOPMENT RECORD

Project: NTC ORLANDO	Well Installation Date and Time: 4/28/98 0920		Project No.: 02530.C
Client: NAVY	Well Development Date and Time: 5/12/98 1340	Logged by: G. Mudd	Checked by: M. Todaro
Well/Site I.D.: OLD-17-12C	Weather: hazy, hot, humid	Start Date: 5/12/98	Finish Date: 5/12/98
Volume of Drilling Fluid Lost (gal.) 10	Volume of Water in Well and Filter Pack (gal.) 10	Start Time: 1340	Finish Time: 1525

Installed Depth From Top of Well Casing to Bottom of Well: 27'

Initial Depth to Water (ft): 27'

Initial Depth to Well Bottom: 50'

Water Level during Initial Pumping/Purging (ft): 27'

Depth to Water at Termination of Pumping/Purging (ft): 27'

Depth to Well Bottom at Termination of Pumping/Purging (ft): 50'

	TIME	TEMP.	pH	Conductivity	Approximate Pumping Rate (gal/min)
BEGINNING OF WELL DEVELOPMENT	1355	37.0°C	7.11	265	0.75
	1425	38.0	7.13	180	0.75
	1440	38.0	7.13	150	0.75
	1455	38.0	7.13	145	0.75
	1510	38.0	7.13	138	0.75
END OF WELL DEVELOPMENT	1525	38.0	7.12	140	0.75

NOTES: (Include physical character of removed water, type & size of pump, volume of water removed.)

Water is very turbid, chocolate brown. Honda centrifugal pump (1/2 Hp) Approximately 100 gallons purged.

Well Developer's Signature Mark C Todaro

WELL DEVELOPMENT RECORD

Project: NTC ORLANDO	Well Installation Date and Time: 4/28/98 1615			Project No. 2530.05
Client: NAVY	Well Development Date and Time: 5/18/98 1015		Logged by: G. Mudd	Checked by: M. Todaro
Well/Site I.D.: OLD-17-13B	Weather: hot, humid		Start Date: 5/18/98	Finish Date: 5/18/98
Volume of Drilling Fluid Lost (gal.) 0	Volume of Water in Well and Filter Pack (gal.) 35		Start Time: 1015	Finish Time: 1130

Installed Depth From Top of Well Casing to Bottom of Well: 20.5

Initial Depth to Water (ft): 4.45 | Initial Depth to Well Bottom: 19.60

Water Level during Initial Pumping/Purging (ft): 4.45

Depth to Water at Termination of Pumping/Purging (ft): 4.45 | Depth to Well Bottom at Termination of Pumping/Purging (ft): 19.60

	TIME	TEMP.	pH	Conductivity	Approximate Pumping Rate (gal/min)
BEGINNING OF WELL DEVELOPMENT	1015	24.3	5.29	308	1
	1045	25.3	5.85	226	1
	1100	23.8	5.90	177	1
	1110	23.7	5.82	160	1
	1120	23.8	5.80	160	1
END OF WELL DEVELOPMENT	1130	23.8	5.84	156	1

NOTES: (Include physical character of removed water, type & size of pump, volume of water removed.)

Turbidity > 200 ntu. Removed 100 gallons with Honda 1/2 hp pump. Centrifugal pump.

Well Developer's Signature: Mark C Todaro

WELL DEVELOPMENT RECORD

Project: NTC ORLANDO	Well Installation Date and Time: 4/29/98 0900		Project No. 2530.[illegible]
Client: NAVY	Well Development Date and Time: 5/18/98 1215	Logged by: G. Mudd	Checked by: M. Todaro
Well/Site I.D.: OLD-17-14C	Weather: hot, humid	Start Date: 5/18/98	Finish Date: 5/18/98
Volume of Drilling Fluid Lost (gal.) ≃ 10.0	Volume of Water in Well and Filter Pack (gal.) 9.0 gal.	Start Time: 1215	Finish Time: 1305

Installed Depth From Top of Well Casing to Bottom of Well: 48.50

Initial Depth to Water (ft): 6.33 | Initial Depth to Well Bottom: 48.70

Water Level during Initial Pumping/Purging (ft): 6.33

Depth to Water at Termination of Pumping/Purging (ft): 5.50 | Depth to Well Bottom at Termination of Pumping/Purging (ft): 48.70

	TIME	TEMP.	pH	Conductivity	Approximate Pumping Rate (gal/min)
BEGINNING OF WELL DEVELOPMENT	1215	26.3	5.92	328	2.5
	1245	25.5	5.75	250	2.5
	1250	25.6	5.64	278	2.5
	1255	25.5	5.64	232	2.5
	1300	25.7	5.64	229	2.5
END OF WELL DEVELOPMENT	1305	26.9	5.60	229	2.5

NOTES: (Include physical character of removed water, type & size of pump, volume of water removed.)

Turbidity >200 Chocolate brown in color. Pumped 165 gallons with Honda 1/2 Hp, centrifugal pump.

Well Developer's Signature Mark C Todaro

WELL DEVELOPMENT RECORD

Project: NTC ORLANDO	Well Installation Date and Time: 4/29/98 1400		Project No. 02530.05
Client: NAVY	Well Development Date and Time: 5/13/98 1240	Logged by: G. Mudd	Checked by: M. Todaro
Well/Site I.D.: OLD-17-15A	Weather: hot, humid	Start Date: 5/13/98	Finish Date: 5/13/98
Volume of Drilling Fluid Lost (gal.) 0	Volume of Water in Well and Filter Pack (gal.) 1.40	Start Time: 1240	Finish Time: 1330

Installed Depth From Top of Well Casing to Bottom of Well: 12'

Initial Depth to Water (ft): 3.05'

Initial Depth to Well Bottom: 11.70'

Water Level during Initial Pumping/Purging (ft): 3.10

Depth to Water at Termination of Pumping/Purging (ft): 3.05

Depth to Well Bottom at Termination of Pumping/Purging (ft): 11.70'

	TIME	TEMP.	pH	Conductivity	Approximate Pumping Rate (gal/min)
BEGINNING OF WELL DEVELOPMENT	1245	25.9	7.13	143	0.75
	1300	27.9	7.13	137	0.75
	1310	28.2	7.12	119	0.75
	1320	26.6	7.11	119	0.75
	1330	26.5	7.11	120	0.75
END OF WELL DEVELOPMENT	1330	26.5	7.11	120	0.75

NOTES: (Include physical character of removed water, type & size of pump, volume of water removed.)

Turbid, brown water. Honda centrifugal 1/2 Hp pump.
Removed 55 gallons.

Well Developer's Signature [signature]

WELL DEVELOPMENT RECORD

Project: NTC ORLANDO	Well Installation Date and Time: 4/29/98 1410		Project No. 2530.0
Client: NAVY	Well Development Date and Time: 5/13/98 1405	Logged by: G. Mudd	Checked by: M. Todaro
Well/Site I.D.: OLD-17-16B	Weather: hot, humid	Start Date: 5/13/98	Finish Date: 5/13/98
Volume of Drilling Fluid Lost (gal.) 0	Volume of Water in Well and Filter Pack (gal.) 2.24	Start Time: 1405	Finish Time: 1450

Installed Depth From Top of Well Casing to Bottom of Well: 20.5'

Initial Depth to Water (ft): 5.60'

Initial Depth to Well Bottom: 19.6'

Water Level during Initial Pumping/Purging (ft): 5.6'

Depth to Water at Termination of Pumping/Purging (ft): 5.4'

Depth to Well Bottom at Termination of Pumping/Purging (ft): 19.6

	TIME	TEMP.	pH	Conductivity	Approximate Pumping Rate (gal/min)
BEGINNING OF WELL DEVELOPMENT	1405	25.6	7.14	245	1
	1425	27.8	7.13	220	1
	1435	25.6	7.12	189	1
	1440	25.1	7.12	175	1
	1445	25.6	7.12	170	1
END OF WELL DEVELOPMENT	1450	25.7	7.12	168	1

NOTES: (Include physical character of removed water, type & size of pump, volume of water removed.)

Water highly turbid. Honda 1/2 Hp pump (centrifugal).
Removed 60 gallons.

Well Developer's Signature Mark C Todaro

WELL DEVELOPMENT RECORD

Project: NTC ORLANDO	Well Installation Date and Time: 4/30/98 0800		Project No. 02530.05
Client: NAVY	Well Development Date and Time: 5/13/98 1125	Logged by: G. Mudd	Checked by: M. Todaro
Well/Site I.D.: OLD-17-17C	Weather: hazy hot, humid	Start Date: 5/13/98	Finish Date: 5/13/98
Volume of Drilling Fluid Lost (gal.) ≈ 10	Volume of Water in Well and Filter Pack (gal.) 7.5	Start Time: 1125	Finish Time: 1235

Installed Depth From Top of Well Casing to Bottom of Well: 49'

Initial Depth to Water (ft): 3.26'

Initial Depth to Well Bottom: 49.0

Water Level during Initial Pumping/Purging (ft): 3.30

Depth to Water at Termination of Pumping/Purging (ft): 5.60

Depth to Well Bottom at Termination of Pumping/Purging (ft): 49.0

	TIME	TEMP.	pH	Conductivity	Approximate Pumping Rate (gal/min)
BEGINNING OF WELL DEVELOPMENT	1200	27.1	7.14	152	2
	1210	27.0	7.15	141	2
	1220	26.2	7.14	141	2
	1225	25.6	7.14	135	2
	1230	25.6	7.14	142	2
END OF WELL DEVELOPMENT	1235	25.4	7.14	142	2

NOTES: (Include physical character of removed water, type & size of pump, volume of water removed.)

Turbidity > 200, brown water. Honda centrifugal 1/2 Hp.
Removed 155 gallons

Well Developer's Signature Mark C Todaro

WELL DEVELOPMENT RECORD

Project: NTC ORLANDO	Well Installation Date and Time: 4/30/98 1115		Project No. 2530
Client: NAVY	Well Development Date and Time: 5/19/98 1300	Logged by: G. Mudd	Checked by: M. Todaro
Well/Site I.D.: OLD-17-18A	Weather: hot, humid	Start Date: 5/19/98	Finish Date: 5/19/98
Volume of Drilling Fluid Lost (gal.) 0	Volume of Water in Well and Filter Pack (gal.) 12	Start Time: 1300	Finish Time: 1355

Installed Depth From Top of Well Casing to Bottom of Well: 12.5'

Initial Depth to Water (ft): 6.40

Initial Depth to Well Bottom: 11.5'

Water Level during Initial Pumping/Purging (ft): 6.40

Depth to Water at Termination of Pumping/Purging (ft): 7.10

Depth to Well Bottom at Termination of Pumping/Purging (ft): 11.5

	TIME	TEMP.	pH	Conductivity	Approximate Pumping Rate (gal/min)
BEGINNING OF WELL DEVELOPMENT	1300	29.7	5.76	300	.4
	1310	34.4	5.88	250	.4
	1320	36.9	5.92	190	.4
	1330	36.8	6.06	200	.4
	1340	36.8	6.14	200	.4
END OF WELL DEVELOPMENT	1355	33.5	6.16	210	.4

NOTES: (Include physical character of removed water, type & size of pump, volume of water removed.)

Turbidity >200, chocolate brown in color. Purged 25 gallons with Honda 1/2 Hp, centrifugal pump.

Well Developer's Signature Mark C Todaro

WELL DEVELOPMENT RECORD

Project: NTC ORLANDO
Well Installation Date and Time: 5/ /98 1145
Project No. 2530.05

Client: NAVY
Well Development Date and Time: 5/19/98 1015
Logged by: G. Mudd
Checked by: M. Todaro

Well/Site I.D.: OLD-17-19B
Weather: hot, humid
Start Date: 5/19/98
Finish Date: 5/19/98

Volume of Drilling Fluid Lost (gal.) 0
Volume of Water in Well and Filter Pack (gal.) 5
Start Time: 1015
Finish Time: 1130

Installed Depth From Top of Well Casing to Bottom of Well: 30.5'

Initial Depth to Water (ft): 6.20
Initial Depth to Well Bottom: 29.6'

Water Level during Initial Pumping/Purging (ft): 6.20

Depth to Water at Termination of Pumping/Purging (ft): 6.45
Depth to Well Bottom at Termination of Pumping/Purging (ft): 29.6

	TIME	TEMP.	pH	Conductivity	Approximate Pumping Rate (gal/min)
BEGINNING OF WELL DEVELOPMENT	1015	33.2	6.33	300	.66
	1030	29.9	5.98	380	.66
	1045	28.1	6.31	305	.66
	1100	29.0	6.30	350	.66
	1115	29.3	5.80	330	.66
END OF WELL DEVELOPMENT	1130	28.8	5.81	310	.66

NOTES: (Include physical character of removed water, type & size of pump, volume of water removed.)

Water is very turbid (>200). Pumped 55 gallons with Honda centrifugal 1/2 Hp pump.

Well Developer's Signature: Mark C Todaro

WELL DEVELOPMENT RECORD

Project: NTC ORLANDO	Well Installation Date and Time: 5/4/98 0910		Project No. 2530.
Client: NAVY	Well Development Date and Time: 5/18/98 1410	Logged by: G. Mudd	Checked by: M. Todaro
Well/Site I.D.: OLD-17-20C	Weather: hot, humid	Start Date: 5/18/98	Finish Date: 5/18/98
Volume of Drilling Fluid Lost (gal.) ≃ 10	Volume of Water in Well and Filter Pack (gal.) 9.5	Start Time: 1410	Finish Time: 1515

Installed Depth From Top of Well Casing to Bottom of Well: 52.5'

Initial Depth to Water (ft): 4.85

Initial Depth to Well Bottom: 51.6'

Water Level during Initial Pumping/Purging (ft): 4.85

Depth to Water at Termination of Pumping/Purging (ft): 7.90

Depth to Well Bottom at Termination of Pumping/Purging (ft): 51.6

	TIME	TEMP.	pH	Conductivity	Approximate Pumping Rate (gal/min)
BEGINNING OF WELL DEVELOPMENT	1410	28.5	5.82	360	3
	1435	27.5	5.38	225	3
	1445	27.6	5.34	210	3
	1455	27.3	5.32	200	3
	1505	27.4	5.32	192	3
END OF WELL DEVELOPMENT	1515	27.3	5.31	190	3

NOTES: (Include physical character of removed water, type & size of pump, volume of water removed.)

Water turbid, chocolate brown in color. Pumped 165 gallons with centrifugal Honda ½ Hp pump.

Well Developer's Signature Mark C Todaro

WELL DEVELOPMENT RECORD

Project: NTC ORLANDO

Well Installation Date and Time: 5/5/98 0850

Project No. 2530.05

Client: NAVY

Well Development Date and Time: 5/20/98 0945

Logged by: G. Mudd

Checked by: M. Todero

Well/Site I.D.: OLD17-21B

Weather: hot, humid

Start Date: 5/20/98

Finish Date: 5/20/98

Volume of Drilling Fluid Lost (gal.) 0

Volume of Water in Well and Filter Pack (gal.) 2.5

Start Time: 0945

Finish Time: 1100

Installed Depth From Top of Well Casing to Bottom of Well: 20.5'

Initial Depth to Water (ft): 8.85

Initial Depth to Well Bottom: 19.8'

Water Level during Initial Pumping/Purging (ft): 8.85

Depth to Water at Termination of Pumping/Purging (ft):

Depth to Well Bottom at Termination of Pumping/Purging (ft): 19.8'

	TIME	TEMP.	pH	Conductivity	Approximate Pumping Rate (gal/min)
BEGINNING OF WELL DEVELOPMENT	0945	27.5	6.68	240	.3
	1000	26.5	5.23	230	.3
	1015	26.0	5.38	220	.3
	1030	27.9	5.49	225	.3
	1045	28.0	5.64	235	.3
END OF WELL DEVELOPMENT	1100	27.7	5.64	210	.3

NOTES: (Include physical character of removed water, type & size of pump, volume of water removed.)

Water is very turbid (>200). Purged 45 gallons with Honda centrifugal 1/2 Hp pump.

Well Developer's Signature Mark C. Todero

WELL DEVELOPMENT RECORD

Project: NTC ORLANDO	Well Installation Date and Time: 5/5/98 0920		Project No. 2530.C
Client: NAVY	Well Development Date and Time: 5/20/98 1150	Logged by: G. Mudd	Checked by: M. Tadaro
Well/Site I.D.: OLD-17-22C	Weather: hot humid	Start Date: 5/20/98	Finish Date: 5/20/98
Volume of Drilling Fluid Lost (gal.) ≃10	Volume of Water in Well and Filter Pack (gal.) 8.0	Start Time: 1150	Finish Time: 1300

Installed Depth From Top of Well Casing to Bottom of Well: 48.5

Initial Depth to Water (ft): 5.20 | Initial Depth to Well Bottom: 47.5

Water Level during Initial Pumping/Purging (ft): 5.20

Depth to Water at Termination of Pumping/Purging (ft): 5.40 | Depth to Well Bottom at Termination of Pumping/Purging (ft): 47.5

	TIME	TEMP.	pH	Conductivity	Approximate Pumping Rate (gal/min)
BEGINNING OF WELL DEVELOPMENT	1150	30.4	5.98	1200	1
	1210	29.5	5.68	410	1
	1230	29.3	5.44	265	1
	1240	28.9	5.41	235	1
	1250	28.9	5.38	210	1
END OF WELL DEVELOPMENT	1300	28.9	5.32	200	1

NOTES: (Include physical character of removed water, type & size of pump, volume of water removed.)

Water is very turbid (>200 NTU). Purged 100 gallons with Honda centrifugal 1/2 Hp pump.

Well Developer's Signature Mark C Todaro

WELL DEVELOPMENT RECORD

Project: NTC ORLANDO	Well Installation Date and Time: 5/5/98 1230		Project No. 2530.05
Client: NAVY	Well Development Date and Time: 5/21/98 1215	Logged by: G. Mudd	Checked by: M. Todaro
Well/Site I.D.: OLD-17-23A	Weather: hot, humid	Start Date: 5/21/98	Finish Date: 5/21/98
Volume of Drilling Fluid Lost (gal.) 0	Volume of Water in Well and Filter Pack (gal.) 2	Start Time: 1215	Finish Time: 1310

Installed Depth From Top of Well Casing to Bottom of Well: 12'

Initial Depth to Water (ft): 3.17

Initial Depth to Well Bottom: 11.4'

Water Level during Initial Pumping/Purging (ft): 3.2'

Depth to Water at Termination of Pumping/Purging (ft): 3.4'

Depth to Well Bottom at Termination of Pumping/Purging (ft): 11.4'

	TIME	TEMP.	pH	Conductivity	Approximate Pumping Rate (gal/min)
BEGINNING OF WELL DEVELOPMENT	1215	27.6	6.09	340	>200
	1230	27.1	6.04	275	>200
	1240	27.4	5.94	298	>200
	1250	26.8	6.07	318	>200
	1300	26.0	6.07	272	>200
END OF WELL DEVELOPMENT	1310	26.2	6.06	260	>200

NOTES: (Include physical character of removed water, type & size of pump, volume of water removed.)

Very turbid water, chocolate brown. Removed 125 gallons with Honda 0.5 hp centrifugal pump.

Well Developer's Signature Mark C Todaro

WELL DEVELOPMENT RECORD

Project: NTC ORLANDO	Well Installation Date and Time: 5/5/98 1140		Project No. 2530.C
Client: NAVY	Well Development Date and Time: 5/21/98 1335	Logged by: Mark T	Checked by: Greg M.
Well/Site I.D.: OLD-17-24B	Weather: Hot, humid	Start Date: 5/21/98	Finish Date: 5/21/98
Volume of Drilling Fluid Lost (gal.) 0	Volume of Water in Well and Filter Pack (gal.) = 4	Start Time: 1335	Finish Time: 1435

Installed Depth From Top of Well Casing to Bottom of Well: 24.5

Initial Depth to Water (ft): 5.18 | Initial Depth to Well Bottom: 24.5

Water Level during Initial Pumping/Purging (ft): 5.20

Depth to Water at Termination of Pumping/Purging (ft): 5.20 | Depth to Well Bottom at Termination of Pumping/Purging (ft): 24.5

	TIME	TEMP.	pH	Conductivity	Approximate Pumping Rate (gal/min)
BEGINNING OF WELL DEVELOPMENT	1335	28.3	5.84	260	1
	1350	27.5	5.71	220	1
	1405	27.2	5.74	220	1
	1415	27.5	5.67	200	1
	1425	27.3	5.69	200	1
END OF WELL DEVELOPMENT	1435	27.3	5.68	202	1

NOTES: (Include physical character of removed water, type & size of pump, volume of water removed.)

Turbidity >200, chocolate brown water. Pumped 135 gallons with Honda, 1/2 Hp centrifugal pump.

Well Developer's Signature Mark Toler

WELL DEVELOPMENT RECORD

Project: NTC ORLANDO	Well Installation Date and Time: 5/7/95 1015		Project No. 2530.05
Client: NAVY	Well Development Date and Time: 5/21/98 1105	Logged by: G. Mudd	Checked by: M. Todaro
Well/Site I.D.: OLD-17-25C	Weather: hot humid	Start Date: 5/21/98	Finish Date: 5/21/98
Volume of Drilling Fluid Lost (gal.) ≈ 10	Volume of Water in Well and Filter Pack (gal.) ≈ 7	Start Time: 1105	Finish Time: 1150

Installed Depth From Top of Well Casing to Bottom of Well: 63.5

Initial Depth to Water (ft): 24.0	Initial Depth to Well Bottom: 64.0

Water Level during Initial Pumping/Purging (ft): 24.1

Depth to Water at Termination of Pumping/Purging (ft): 24.1	Depth to Well Bottom at Termination of Pumping/Purging (ft): 64.0

	TIME	TEMP.	pH	Conductivity	Approximate Pumping Rate (gal/min)
BEGINNING OF WELL DEVELOPMENT	1105	28.5	10.47	1650	>200
	1120	28.9	9.83	1300	>200
	1135	28.7	10.41	950	>200
	1150	28.5	10.42	780	>200
END OF WELL DEVELOPMENT					

NOTES: (Include physical character of removed water, type & size of pump, volume of water removed.)
Very turbid water, chocolate brown in color. Purged 25 gallons with Honda 1/2 Hp centrifugal pump.

Well Developer's Signature Mark C Todaro

WELL DEVELOPMENT RECORD

Project: NTC ORLANDO	Well Installation Date and Time: 5/5/98 1410		Project No. 2530.[illegible]
Client: NAVY	Well Development Date and Time: 5/20/98 1340	Logged by: M. Todaro	Checked by: G. Mudd
Well/Site I.D.: OLD-17-26A	Weather: hot, humid	Start Date: 5/5/98	Finish Date: 5/5/98
Volume of Drilling Fluid Lost (gal.) 0	Volume of Water in Well and Filter Pack (gal.) ≈ 1.5	Start Time: 1340	Finish Time: 1450

Installed Depth From Top of Well Casing to Bottom of Well: 12.5

Initial Depth to Water (ft): 2.25 | Initial Depth to Well Bottom: 12.5

Water Level during Initial Pumping/Purging (ft): 2.27

Depth to Water at Termination of Pumping/Purging (ft): 2.25 | Depth to Well Bottom at Termination of Pumping/Purging (ft): 12.5

	TIME	TEMP.	pH	Conductivity	Approximate Pumping Rate (gal/min)
BEGINNING OF WELL DEVELOPMENT	1340	27.7	5.99	390	.5
	1400	25.9	6.68	375	.5
	1420	27.4	6.63	345	.5
	1435	27.1	6.67	370	.5
	1445	26.7	6.77	370	.5
END OF WELL DEVELOPMENT	1450	26.3	6.82	370	.5

NOTES: (Include physical character of removed water, type & size of pump, volume of water removed.)

Turbid water, brown in color. Pumped 175 gallons
Honda 1/2 hp centrifugal pump was used.

Well Developer's Signature Mark C. Todaro

WELL DEVELOPMENT RECORD

Project: NTC ORLANDO	Well Installation Date and Time: 5/5/98 1345		Project No. 2530.05
Client: NAVY	Well Development Date and Time: 5/21/98 0945	Logged by: M. Todaro	Checked by: G. Mudd
Well/Site I.D.: OLD-17-27B	Weather: hot, humid	Start Date: 5/5/98	Finish Date: 5/5/98
Volume of Drilling Fluid Lost (gal.)	Volume of Water in Well and Filter Pack (gal.)	Start Time: 0945	Finish Time: 1100

Installed Depth From Top of Well Casing to Bottom of Well: 20.0

Initial Depth to Water (ft): 2.92

Initial Depth to Well Bottom: 19.50

Water Level during Initial Pumping/Purging (ft): 2.94

Depth to Water at Termination of Pumping/Purging (ft): 2.92

Depth to Well Bottom at Termination of Pumping/Purging (ft): 19.50

	TIME	TEMP.	pH	Conductivity	Approximate Pumping Rate (gal/min)
BEGINNING OF WELL DEVELOPMENT	0945	27.2	6.74	405	1
	1015	26.6	6.09	320	1
	1030	27.2	6.13	306	1
	1040	27.7	6.09	280	1
	1050	27.4	6.09	308	1
END OF WELL DEVELOPMENT	1100	27.5	6.12	292	1

NOTES: (Include physical character of removed water, type & size of pump, volume of water removed.)

Very turbid, silty water. Purged 90 gallons of water. Honda 2" centrifugal pump was used.

Well Developer's Signature Mark Todaro

WELL DEVELOPMENT RECORD

Project: NTC ORLANDO	Well Installation Date and Time: 5/6/98 1345		Project No. 2530.(
Client: NAVY	Well Development Date and Time: 5/22/98 0920	Logged by: G. Mudd	Checked by: M. Todaro
Well/Site I.D.: OLD-17-28C	Weather: hot, humid	Start Date: 5/22/98	Finish Date: 5/22/98
Volume of Drilling Fluid Lost (gal.) ≃10	Volume of Water in Well and Filter Pack (gal.) ≃10	Start Time: 0920	Finish Time: 1030

Installed Depth From Top of Well Casing to Bottom of Well: 63.0

Initial Depth to Water (ft): 17.50

Initial Depth to Well Bottom: 63.0

Water Level during Initial Pumping/Purging (ft): 17.54

Depth to Water at Termination of Pumping/Purging (ft): 17.50

Depth to Well Bottom at Termination of Pumping/Purging (ft): 63.0

	TIME	TEMP.	pH	Conductivity	Approximate Pumping Rate (gal/min)
BEGINNING OF WELL DEVELOPMENT	0920	26.4	6.38	460	1
	0950	26.4	6.52	390	1
	1000	26.5	6.48	392	1
	1010	26.5	6.50	380	1
	1020	26.4	6.48	380	1
END OF WELL DEVELOPMENT	1030	26.7	6.45	380	1

NOTES: (Include physical character of removed water, type & size of pump, volume of water removed.)

Turbid water, brown in color. Purged 45 gallons with Honda 1/2 Hp centrifugal pump.

Well Developer's Signature Mark Todaro

GROUNDWATER SAMPLE FIELD DATA

Project: SITE SCREENING
Project Number: CTO 107
Sample Location ID: 17GOO101
Time: Start: 07:43 End:

Point of Interest: S.A. 17
Date: 5/31/95
Signature of Sampler: GRIETENS/BURNS

Water Level/Well Data

Well Depth 12.74 Ft. ✓ Measured ___ Historical
✓ Top of Well ___ Top of Protective Casing
Well Riser Stick-up (from ground) 0. Ft.
Protective Casing/Well Difference 0. Ft.
Protective Casing 0. Ft.

Depth to Water 5.12 Ft.
Well Material: ✓ PVC ___ SS
Well Locked?: ✓ Yes ___ No
Well Dia. ✓ 2 inch ___ 4 inch ___ 6 inch
Water Level Equip. Used: ✓ Elect. Cond. Probe ___ Float Activated ___ Press. Transducer

Height of Water Column 7.62 Ft. X ___ .16 Gal/Ft. (2 in.) ___ .65 Gal/Ft. (4 in.) ___ 1.5 Gal/Ft. (6 in.) .155 Gal/Ft. (___ in.) = 4.2 Gal/Vol; 7. Total Gal Purged

Well Integrity: | Yes | No
Prot. Casing Secure | |
Concrete Collar Intact | ✓ |
Other ___

Equipment Documentation

Purging/Sampling Equipment Used:

(✓ if Used For)

Purging	Sampling	Equipment	Equipment ID
✓	✓	Peristaltic Pump	
		Submersible Pump	
		Bailer	
		PVC/Silicon Tubing	
✓	✓	Teflon/Silicon Tubing	
		Airlift	
		Hand Pump	
		In-line Filter	
		Press/Vac Filter	

Decontamination Fluids Used:

(✓ All That Apply at Location)
___ Methanol (100%)
___ 25% Methanol/75% ASTM Type II water
✓ Deionized Water
___ Liquinox Solution
___ Hexane
___ HNO_3/D.I. Water Solution
___ Potable Water
___ None
✓ ALCONOX
✓ ISOPROPYL

Field Analysis Data

Ambient Air VOC 0. ppm Well Mouth 0 ppm Field Data Collected ✓ In-line ___ In Container
Sample Observations: ___ Turbid ___ Colored ___ Clear ___ Odor ___ Cloudy

Purge Data	@ 2 Gal.	@ 3 Gal.	@ 4 Gal.	@ 5 Gal.	@ 6 Gal.	7
Temperature, Deg. C	26.0	26.0	26.0	26.0	26.0	26.0
pH, units	6.[illegible]	6.77	6.73	6.73	6.77	6.78
Specific Conductivity (umhos/cm. @ 25 Deg. C)	890	875.	850.	850.	850.	850.
Oxidation - Reduction, +/- mv						
Dissolved Oxygen, ppm						

Sample Collection Requirements

(✓ if Required at this Location)

Analytical Parameter	✓ if Field Filtered	Preservation Method	Volume Required	✓ if Sample Collected	Sample Bottle IDs
VOA		HCL			/ / /
SVOA		4C			/ / /
Pest/PCB		4C			/ / /
Inorganics		HNO_3			/ / /
Explosives		4°C			/ / /
TPH		H_2SO_4			/ / /
TOC		H_2SO_4			/ / /
Nitrate		H_2SO_4			/ / /

Notes:
LOW-FLOW PURGE
FINAL HTW = 17.8

GROUNDWATER SAMPLE FIELD DATA

Project: SITE SCREENING
Project Number: CTO 107
Sample Location ID: 17G00201
Time: Start: 10:11 End: 11:20

Point of Interest: S.A. 17
Date: 5/31/95
Signature of Sampler: NASH/HAWES

Water Level/Well Data

Well Depth 12.5 Ft. ___ Measured ✓ Historical

✓ Top of Well ___ Top of Protective Casing

Well Riser Stick-up 0. Ft. (from ground)

Protective Casing/Well Difference 0 Ft.

Protective Casing 0 Ft.

Depth to Water 4.63 Ft.

Well Material: ✓ PVC ___ SS

Well Locked?: ✓ Yes ___ No

Well Dia. ✓ 2 inch ___ 4 inch ___ 6 inch

Water Level Equip. Used: ✓ Elect. Cond. Probe ___ Float Activated ___ Press. Transducer

Height of Water Column 7.87 Ft. X ___ .16 Gal/Ft. (2 in) ___ .65 Gal/Ft. (4 in) ___ 1.5 Gal/Ft. (6 in) .55 Gal/Ft. (__ in) = 4.3 Gal/Vol; 9. Total Gal Purged

Well Integrity:	Yes	No
Prot. Casing Secure	✓	
Concrete Collar Intact	✓	
Other		

Equipment Documentation

Purging/Sampling Equipment Used:

(✓ If Used For)

Purging	Sampling		Equipment ID
		Peristaltic Pump	
		Submersible Pump	
		Bailer	
		PVC/Silicon Tubing	
✓	✓	Teflon/Silicon Tubing	
		Airlift	
		Hand Pump	
		In-line Filter	
		Press/Vac Filter	

Decontamination Fluids Used:

(✓ All That Apply at Location)

- ___ Methanol (100%)
- ___ 25% Methanol/75% ASTM Type II water
- ✓ Deionized Water
- ___ Liquinox Solution
- ___ Hexane
- ___ HNO_3/D.I. Water Solution
- ___ Potable Water
- ___ None
- ✓ ALCONOX
- ✓ ISOPROPYL

Field Analysis Data

Ambient Air VOC 0 ppm Well Mouth 0 ppm

Field Data Collected ___ In-line ✓ In Container

Sample Observations: ___ Turbid ___ Colored ___ Clear ___ Odor ___ Cloudy

Purge Data	@ 5 Gal.	@ 6 Gal.	@ 7 Gal.	@ 8 Gal.	@ 9 Gal.
Temperature, Deg. C	29.0	29.0	29.0	29.0	29.0
pH, units	6.74	6.72	6.74	6.73	6.77
Specific Conductivity (umhos/cm. @ 25 Deg. C)	445.	450	450	450.	450.
Oxidation - Reduction, +/- mv					
Dissolved Oxygen, ppm					

Sample Collection Requirements (✓ If Required at this Location)

Analytical Parameter	✓ If Field Filtered	Preservation Method	Volume Required	✓ If Sample Collected	Sample Bottle IDs
VOA		HCL			/ / /
SVOA		4OC			/ / /
Pest/PCB		4OC			/ / /
Inorganics		HNO_3			/ / /
Explosives		4°C			/ / /
TPH		H_2SO_4			/ / /
TOC		H_2SO_4			/ / /
Nitrate		H_2SO_4			/ / /

Notes:
LOW-FLOW PURGE
FINAL NTU = 27.1

GROUNDWATER SAMPLE FIELD DATA

Project: SITE SCREENING
Project Number: CTO 107
Sample Location ID: 17600301
Time: Start: 10:38 End: 13:00
Point of Interest: S.A. 17
Date: 5/31/95
Signature of Sampler: [signature]

Water Level/Well Data

Well Depth 12.43 Ft. ✓ Measured ___ Historical
✓ Top of Well ___ Top of Protective Casing
Well Riser Stick-up (from ground) 0. Ft.
Protective Casing/Well Difference 0. Ft.
Protective Casing 0. Ft.

Depth to Water 4.25 Ft.
Well Material: ✓ PVC ___ SS
Well Locked?: ✓ Yes ___ No
Well Dia. ✓ 2 inch ___ 4 inch ___ 6 inch
Water Level Equip. Used: ✓ Elect. Cond. Probe ___ Float Activated ___ Press. Transducer

Height of Water Column 8.18 Ft. X ___ .16 Gal/Ft. (2 in) ___ .65 Gal/Ft. (4 in) ___ 1.5 Gal/Ft. (6 in) .55 Gal/Ft. (in) = 4.5 Gal/Vol; 30 Total Gal Purged

Well Integrity: | Yes | No
Prot. Casing Secure | ✓ |
Concrete Collar Intact | ✓ |
Other ___

Equipment Documentation

Purging/Sampling Equipment Used:

Purging (✓ if Used For)	Sampling	Equipment	Equipment ID
✓	✓	Peristaltic Pump	
		Submersible Pump	
		Bailer	
		PVC/Silicon Tubing	
✓	✓	Teflon/Silicon Tubing	
		Airlift	
		Hand Pump	
		In-line Filter	
		Press/Vac Filter	

Decontamination Fluids Used: (✓ All That Apply at Location)
- ___ Methanol (100%)
- ___ 25% Methanol/75% ASTM Type II water
- ✓ Deionized Water
- ___ Liquinox Solution
- ___ Hexane
- ___ HNO_3/D.I. Water Solution
- ___ Potable Water
- ___ None
- ✓ ALCONOX
- ✓ ISOPROPYL

Field Analysis Data

Ambient Air VOC 0 ppm Well Mouth 0 ppm Field Data Collected ___ In-line ___ In Container
Sample Observations: ___ Turbid ___ Clear ___ Cloudy ___ Colored ___ Odor

Purge Data	@ 20. Gal.	@ 22. Gal.	@ 25 Gal.	@ 27.5 Gal.	@ 30. Gal.
Temperature, Deg. C	26.0	26.0	26.0	26.0	26.0
pH, units	[illegible]	[illegible]	[illegible]	5.93	6.04
Specific Conductivity (umhos/cm. @ 25 Deg. C)	212	[illegible]	208	210	208
Oxidation - Reduction, +/- mv					
Dissolved Oxygen, ppm					

Sample Collection Requirements (✓ if Required at this Location)

Analytical Parameter	✓ if Field Filtered	Preservation Method	Volume Required	✓ if Sample Collected	Sample Bottle IDs
VOA		HCL			/ / /
SVOA		4OC			/ / /
Pest/PCB		4OC			/ / /
Inorganics		HNO_3			/ / /
Explosives		4°C			/ / /
TPH		H_2SO_4			/ / /
TOC		H_2SO_4			/ / /
Nitrate		H_2SO_4			/ / /

Notes: LOW-FLOW PURGE
FINAL NTU = 131

GROUNDWATER SAMPLE FIELD DATA

Project: SITE SCREENING
Point of Interest: S.A. 17
Project Number: CTO 107
Date: 5/31/95
Sample Location ID: 17G00401
Time: Start: 11:40 End: 13:37
Signature of Sampler: NASH/HAWES

Water Level/Well Data

Well Depth 12.5 Ft. __ Measured ✓ Historical
✓ Top of Well __ Top of Protective Casing
Well Riser Stick-up 0. Ft. (from ground)
Protective Casing/Well Difference 0. Ft.
Protective Casing 0. Ft.

Depth to Water 3.81 Ft.
Well Material: ✓ PVC __ SS
Well Locked?: ✓ Yes __ No
Well Dia. ✓ 2 inch __ 4 inch __ 6 inch
Water Level Equip. Used: ✓ Elect. Cond. Probe __ Float Activated __ Press. Transducer

Height of Water Column 8.69 Ft. X __ .16 Gal/Ft. (2 in) __ .65 Gal/Ft. (4 in) __ 1.5 Gal/Ft. (6 in) .35 Gal/Ft. (__ in) = 45 Gal/Vol; 13. Total Gal Purged

Well Integrity:	Yes	No
Prot. Casing Secure	✓	
Concrete Collar Intact	✓	
Other		

Equipment Documentation

Purging/Sampling Equipment Used:

(✓ If Used For)

Purging	Sampling		Equipment ID
✓	✓	Peristaltic Pump	
		Submersible Pump	
		Bailer	
		PVC/Silicon Tubing	
✓	✓	Teflon/Silicon Tubing	
		Airlift	
		Hand Pump	
		In-line Filter	
		Press/Vac Filter	

Decontamination Fluids Used:

(✓ All That Apply at Location)
- __ Methanol (100%)
- __ 25% Methanol/75% ASTM Type II water
- ✓ Deionized Water
- __ Liquinox Solution
- __ Hexane
- __ HNO_3/D.I. Water Solution
- __ Potable Water
- __ None
- ✓ ALCONOX
- ✓ ISOPROPYL

Field Analysis Data

Ambient Air VOC 0 ppm Well Mouth 0 ppm
Field Data Collected __ In-line ✓ In Container
Sample Observations: __ Turbid __ Clear __ Cloudy __ Colored __ Odor

Purge Data	@ 9 Gal.	@ 10 Gal.	@ 11 Gal.	@ 12 Gal.	@ 13 Gal.
Temperature, Deg. C	33.C	33.0	33.0	33.C	33.C
pH, units	6.59	6.55	6.45	6.52	6.58
Specific Conductivity (umhos/cm. @ 25 Deg. C)	330.	340.	350.	350.	350.
Oxidation - Reduction, +/- mv					
Dissolved Oxygen, ppm					

Sample Collection Requirements
(✓ if Required at this Location)

Analytical Parameter	✓ If Field Filtered	Preservation Method	Volume Required	✓ If Sample Collected	Sample Bottle IDs
VOA		HCL			/ / /
SVOA		4C			/ / /
Pest/PCB		4C			/ / /
Inorganics		HNO_3			/ / /
Explosives		4°C			/ / /
TPH		H_2SO_4			/ / /
TOC		H_2SO_4			/ / /
Nitrate		H_2SO_4			/ / /

Notes:
LOW-FLOW PURGE
FINAL HTV = 10.3

GROUNDWATER SAMPLE FIELD DATA

Project: SITE SCREENING
Point of Interest: S.A. 17
Project Number: CTO 107
Date: 5/31/95
Sample Location ID: 17600501
Time: Start: 07:50 End: 10:08
Signature of Sampler: [illegible]

Water Level/Well Data

Well Depth 12.88 Ft. ✓ Measured ___ Historical

✓ Top of Well ___ Top of Protective Casing

Well Riser Stick-up (from ground) 0. Ft.

Protective Casing/Well Difference 0. Ft.

Protective Casing 0. Ft.

Depth to Water 3.68 Ft.

Well Material: ✓ PVC ___ SS

Well Locked?: ✓ Yes ___ No

Well Dia. ✓ 2 inch ___ 4 inch ___ 6 inch

Water Level Equip. Used: ✓ Elect. Cond. Probe ___ Float Activated ___ Press. Transducer

Height of Water Column 9.20 Ft. X ___ .16 Gal/Ft. (2 in.) ___ .65 Gal/Ft. (4 in.) ___ 1.5 Gal/Ft. (6 in.) .52 Gal/Ft. (__ in.) = 5.1 Gal/Vol; 11.75 Total Gal Purged

Well Integrity:	Yes	No
Prot. Casing Secure	✓	
Concrete Collar Intact	✓	
Other ___		

Equipment Documentation

Purging/Sampling Equipment Used:

(✓ If Used For)

Purging	Sampling		Equipment ID
✓	✓	Peristaltic Pump	
		Submersible Pump	
		Bailer	
		PVC/Silicon Tubing	
✓	✓	Teflon/Silicon Tubing	
		Airlift	
		Hand Pump	
		In-line Filter	
		Press/Vac Filter	

Decontamination Fluids Used:

(✓ All That Apply at Location)

- ___ Methanol (100%)
- ___ 25% Methanol/75% ASTM Type II water
- ✓ Deionized Water
- ___ Liquinox Solution
- ___ Hexane
- ___ HNO_3/D.I. Water Solution
- ___ Potable Water
- ___ None
- ✓ ALCANOX
- ✓ ISOPROPYL

Field Analysis Data

Ambient Air VOC 0. ppm Well Mouth 0. ppm

Field Data Collected ___ In-line ✓ In Container

Sample Observations: ___ Turbid ___ Clear ___ Cloudy ___ Colored ___ Odor

Purge Data	@ 3.75 Gal.	@ 5.5 Gal.	@ 7.25 Gal.	@ 9.5 Gal.	@ 11.75 Gal.
Temperature, Deg. C	25.5	25.5	25.5	25.5	[illegible]
pH, units	6.11	[illegible]	[illegible]	6.21	6.19
Specific Conductivity (umhos/cm. @ 25 Deg. C)	280.	[illegible]	285.	290.	[illegible]
Oxidation - Reduction, +/- mv					
Dissolved Oxygen, ppm					

Sample Collection Requirements

(✓ If Required at this Location)

Analytical Parameter	✓ If Field Filtered	Preservation Method	Volume Required	✓ If Sample Collected	Sample Bottle IDs
VOA		HCL			/ / /
SVOA		4C			/ / /
Pest/PCB		4C			/ / /
Inorganics		HNO_3			/ / /
Explosives		4°C			/ / /
TPH		H_2SO_4			/ / /
TOC		H_2SO_4			/ / /
Nitrate		H_2SO_4			/ / /

Notes: LOW-FLOW PURGE
FINAL NTU = 10.4

GROUNDWATER SAMPLE FIELD DATA

Project: SITE SCREENING
Point of Interest: S.?. 17
Project Number: CTO 107
Date: 6/2/95
Sample Location ID: 17602401
Time: Start: 12:09 End: 14:00
Signature of Sampler: [signature]

Water Level/Well Data

Well Depth 4.63 Ft. ✓ Measured ___ Historical

✓ Top of Well ___ Top of Protective Casing

Well Riser Stick-up (from ground) 0. Ft.

Protective Casing/Well Difference 0. Ft.

Protective Casing 0. Ft.

Depth to Water 3.92 Ft.

Well Material: ✓ PVC ___ SS

Well Locked?: ✓ Yes ___ No

Well Dia. ✓ 2 inch ___ 4 inch ___ 6 inch

Water Level Equip. Used: ✓ Elect. Cond. Probe ___ Float Activated ___ Press. Transducer

Height of Water Column 0.71 Ft. X ✓ .16 Gal/Ft. (2 in.) ___ .65 Gal/Ft. (4 in.) ___ 1.5 Gal/Ft. (6 in.) ___ Gal/Ft. (__ in.) = [.1 Gal/Vol; 5 Total Gal Purged]

Well Integrity:	Yes	No
Prot. Casing Secure	✓	
Concrete Collar Intact	✓	
Other		

Equipment Documentation

Purging/Sampling Equipment Used:

(✓ If Used For)

Purging	Sampling		Equipment ID
✓	✓	Peristaltic Pump	
		Submersible Pump	
		Bailer	
		PVC/Silicon Tubing	
✓	✓	Teflon/Silicon Tubing	
		Airlift	
		Hand Pump	
		In-line Filter	
		Press/Vac Filter	

Decontamination Fluids Used:

(✓ All That Apply at Location)

- ___ Methanol (100%)
- ___ 25% Methanol/75% ASTM Type II water
- ✓ Deionized Water
- ___ Liquinox Solution
- ___ Hexane
- ___ HNO_3/D.I. Water Solution
- ___ Potable Water
- ___ None
- ✓ ALCONOX
- ✓ ISOPROPYL

Field Analysis Data

Ambient Air VOC 0. ppm Well Mouth 3.5(?) ppm

Field Data Collected ___ In-line ✓ In Container

Sample Observations: ___ Turbid ___ Clear ___ Cloudy ___ Colored ___ Odor

Purge Data	@ 1 Gal.	@ 2 Gal.	@ 3 Gal.	@ 4 Gal.	@ 5 Gal.
Temperature, Deg. C	26.0	26.0	26.0	26.0	26.0
pH, units	6.72	[illegible]	6.67	6.72	6.64
Specific Conductivity (umhos/cm. @ 25 Deg. C)	590.	590.	590.	590.	590.
Oxidation - Reduction, +/- mv					
Dissolved Oxygen, ppm					

Sample Collection Requirements (✓ if Required at this Location)

Analytical Parameter	✓ If Field Filtered	Preservation Method	Volume Required	✓ If Sample Collected	Sample Bottle IDs
VOA		HCL			/ / /
SVOA		4C			/ / /
Pest/PCB		4C			/ / /
Inorganics		HNO_3			/ / /
Explosives		4°C			/ / /
TPH		H_2SO_4			/ / /
TOC		H_2SO_4			/ / /
Nitrate		H_2SO_4			/ / /

Notes: LOW-FLOW PURGE
FINAL NTU = 11.2

GROUNDWATER SAMPLE FIELD DATA

Project: NTC ORLANDO
Point of Interest: SA 17 / OLD-17-04
Project Number: 2530.05
Date: 6/17/96
Sample Location ID: 17G00402
Time: Start: 1600 End: 1700
Signature of Sampler: [illegible]

Water Level/Well Data

Well Depth 12.5 Ft. ___ Measured X Historical | X Top of Well ___ Top of Protective Casing | Well Riser Stick-up — Ft. (from ground) | Protective — Ft. Casing/Well Difference

Protective — Ft. Casing

Depth to Water 1.62 Ft.

Well Material: X PVC ___ SS

Well Locked?: X Yes ___ No

Well Dia. X 2 inch ___ 4 inch ___ 6 inch

Water Level Equip. Used: X Elect. Cond. Probe ___ Float Activated ___ Press. Transducer

Height of Water Column 11 Ft. X [X .16 Gal/Ft. (2 in.) ___ .65 Gal/Ft. (4 in.) ___ 1.5 Gal/Ft. (6 in.) ___ Gal/Ft. (__ in.)] = [2.5 Gal/Vol ; 4 Total Gal Purged]

Well Integrity:	Yes	No
Prot. Casing Secure	X	
Concrete Collar Intact	X	
Other		

Equipment Documentation

Purging/Sampling Equipment Used:

(✓ If Used For)

Purging	Sampling		Equipment ID
✓		Peristaltic Pump	
		Submersible Pump	
		Bailer	
		PVC/Silicon Tubing	
✓	✓	Teflon/Silicon Tubing	
		Airlift	
		Hand Pump	
		In-line Filter	
		Press/Vac Filter	

Decontamination Fluids Used:

(✓ All That Apply at Location)

___ Methanol (100%)
___ 25% Methanol/75% ASTM Type II water
✓ Deionized Water
✓ Liquinox Solution
___ Hexane
___ HNO_3/D.I. Water Solution
✓ Potable Water
___ None

Field Analysis Data

Ambient Air VOC 0 ppm Well Mouth 0 ppm Field Data Collected ___ In-line X In Container

Sample Observations: ___ Turbid X Clear ___ Cloudy ___ Colored ___ Odor

Purge Data	@ .1 Gal.	@ .5 Gal.	@ 1.5 Gal.	@ 2.5 Gal.	@ 3.5 Gal.
Temperature, Deg. C	26.5	26.0	26.1	25.5	22.0
pH, units	6.23	6.24	6.27	6.34	6.42
Specific Conductivity (umhos/cm. @ 25 Deg. C.)	250	279	320	316	350
Oxidation - Reduction, +/- mv	—	—	—	—	—
Dissolved Oxygen, ppm	—	—	—	—	—
Turb	50.0	37.0	28.1	15.8	14.1

Sample Collection Requirements

(✓ If Required at this Location)

Analytical Parameter	✓ If Field Filtered	Preservation Method	Volume Required	✓ If Sample Collected	Sample Bottle IDs
VOA		HCL			04 / 6 / 004 / 02
SVOA		4OC			
Pest/PCB		4OC			
Inorganics		HNO_3			
Explosives		4°C			
TPH		H_2SO_4			
TOC		H_2SO_4			
Nitrate		H_2SO_4			

Notes:

GROUNDWATER SAMPLE FIELD DATA

Project: [illegible]
Project Number: [illegible]
Sample Location ID: [illegible] EG00001
Time: Start: [illegible] End: 1200

Point of Interest: SA 17 / OWD-17-06A
Date: 2/12/97
Signature of Sampler: [illegible]

Water Level/Well Data

Well Depth [illegible] ft. ___ Measured X Historical
X Top of Well ___ Top of Protective Casing
Well Riser Stick-up — ft. (from ground)
FLUSH MOUNT
Protective — ft. Casing/Well Difference
Protective — ft. Casing

Depth to Water 39 ft.
Well Material: X PVC ___ SS
Well Locked?: X Yes ___ No
Well Dia. X 2 inch ___ 4 inch ___ 6 inch X .75
MICRO-WELL
Water Level Equip. Used: X Elect. Cond. Probe ___ Float Activated ___ Press. Transducer

Height of Water Column 7 ft. X X .16 Gal/ft. (2 in.) ___ .65 Gal/ft. (4 in.) ___ 1.5 Gal/ft. (6 in.) ___ Gal/ft. (__ in.) = [~2 Gal/Vol; 4 Total Gal Purged]

Well Integrity:	Yes	No
Prot. Casing Secure	✓	
Concrete Collar Intact	✓	
Other	✓	

Equipment Documentation

Purging/Sampling Equipment Used:

(✓ If Used For)

Purging	Sampling		Equipment ID
X	X	Peristaltic Pump	
		Submersible Pump	
		Bailer	
		PVC/Silicon Tubing	
X	X	Teflon/Silicon Tubing	
		Airlift	
		Hand Pump	
		In-line Filter	
		Press/Vac Filter	

Decontamination Fluids Used:

(✓ All That Apply at Location)
___ Methanol (100%)
___ 25% Methanol/75% ASTM Type II water
X Deionized Water
X Liquinox Solution
___ Hexane
___ HNO_3/D.I. Water Solution
X Potable Water
___ None

Field Analysis Data

Ambient Air VOC ∅ ppm Well Mouth ∅ ppm Field Data Collected ___ In-line X In Container
Sample Observations: X Turbid ___ Clear ___ Cloudy ___ Colored ___ Odor

Purge Data	@ 2 Gal.	@ 3 Gal.	@ 4 Gal.	@ ___ Gal.	@ ___ Gal.
TIME	1040	1055	1105		
Temperature, Deg. C	24.2	22.6	21.0		
pH, units	6.77	6.5	6.55		
Specific Conductivity (umhos/cm. @ 25 Deg. C.)	280	275	277		
Oxidation - Reduction, +/- mv	—	—			
Dissolved Oxygen, ppm	—	—			
TURBIDITY	724	720	720		

Sample Collection Requirements

(✓ If Required at this Location)

Analytical Parameter	✓ If Field Filtered	Preservation Method	Volume Required	✓ If Sample Collected	Sample Bottle IDs
VOA		HCL	3 40 ml		17 / G / 006 / 01
SVOA		4OC			/ / /
Pest/PCB		4OC			/ / /
Inorganics		HNO_3			/ / /
Explosives		4°C			/ / /
TPH		H_2SO_4			/ / /
TOC		H_2SO_4			/ / /
Nitrate		H_2SO_4			/ / /

Notes:

GROUNDWATER SAMPLE FIELD DATA

Project: [illegible]
Point of Interest: SA 17 OD-17-074
Project Number: [illegible]
Date: 2/12/97
Sample Location ID: 17G-[illegible]
Time: Start: [illegible] End: 1930
Signature of Sampler: [illegible]

Water Level/Well Data

Well Depth ____ Ft. ____ Measured ✓ Historical
X Top of Well ____ Top of Protective Casing
Well Riser Stick-up ____ Ft. (from ground)
Protective Casing/Well Difference ____ Ft.
FLUSH MOUNT
Protective Casing ____ Ft.

Depth to Water 34 Ft.
Well Material: X PVC ____ SS
Well Locked?: X Yes ____ No
Well Dia. ____ 2 inch ____ 4 inch ____ 6 inch X .75" MICROWELL
Water Level Equip. Used: X Elect. Cond. Probe ____ Float Activated ____ Press. Transducer

Height of Water Column 26 Ft. x X .16 Gal/Ft. (2 in.) ____ .65 Gal/Ft. (4 in.) ____ 1.5 Gal/Ft. (6 in.) ____ Gal/Ft. (__ in.) = .4 Gal/Vol; 5 Total Gal Purged

Well Integrity: | Yes | No
Prot. Casing Secure | X |
Concrete Collar Intact | X |
Other ____ | |

Equipment Documentation

Purging/Sampling Equipment Used:

(✓ If Used For)

Purging	Sampling		Equipment ID
X	X	Peristaltic Pump	
		Submersible Pump	
		Bailer	
		PVC/Silicon Tubing	
X	X	Teflon/Silicon Tubing	
		Airlift	
		Hand Pump	
		In-line Filter	
		Press/Vac Filter	

Decontamination Fluids Used:

(✓ All That Apply at Location)

- ____ Methanol (100%)
- ____ 25% Methanol/75% ASTM Type II water
- X Deionized Water
- X Liquinox Solution
- ____ Hexane
- ____ HNO_3/D.I. Water Solution
- X Potable Water
- ____ None

Field Analysis Data

Ambient Air VOC 0 ppm Well Mouth 0 ppm
Field Data Collected ____ In-line X In Container
Sample Observations: X Turbid ____ Clear ____ Cloudy ____ Colored ____ Odor

Purge Data	@ 3 Gal.	@ 4 Gal.	@ 5 Gal.	@ ____ Gal.	@ ____ Gal.
Temperature, Deg. C	24.5	24 C	24 C		
pH, units	6.71	6.71	6.71		
Specific Conductivity (umhos/cm. @ 25 Deg. C.)	220	220	220		
Oxidation - Reduction, +/- mv	-	-	-		
Dissolved Oxygen, ppm	-	-	-		
TURBIDITY	7200	7200	7200		

Sample Collection Requirements

(✓ If Required at this Location)

Analytical Parameter	✓ If Field Filtered	Preservation Method	Volume Required	✓ If Sample Collected	Sample Bottle IDs
VOA		HCL			17 / G / 007 / 01
SVOA		4OC			/ / /
Pest/PCB		4OC			/ / /
Inorganics		HNO_3			/ / /
Explosives		4°C			/ / /
TPH		H_2SO_4			/ / /
TOC		H_2SO_4			/ / /
Nitrate		H_2SO_4			/ / /

Notes:

GROUNDWATER SAMPLE FIELD DATA

Project: [illegible]
Project Number: [illegible]
Sample Location ID: 17-G-008
Time: Start: 1100 End: 1200

Point of Interest: SA 17 / 06D-17-08A
Date: 2/12/97
Signature of Sampler: [illegible]

Water Level/Well Data

Well Depth: 11 ft. ___ Measured X Historical; X Top of Well; ___ Top of Protective Casing

Well Riser Stick-up (from ground): — ft.
Protective Casing/Well Difference: — ft.
Protective Casing: — ft.

FLUSH-MOUNT
MICROWELL

Depth to Water: 3.90 ft.
Well Material: X PVC; ___ SS
Well Locked?: X Yes; ___ No
Well Dia.: ___ 2 inch; ___ 4 inch; ___ 6 inch; X .75
Water Level Equip. Used: X Elect. Cond. Probe; ___ Float Activated; ___ Press. Transducer

Height of Water Column: 7 ft. x X .16 Gal/ft. (2 in.); ___ .65 Gal/ft. (4 in.); ___ 1.5 Gal/ft. (6 in.); ___ Gal/ft. (__ in.) = 2 Gal/Vol; 5 Total Gal Purged

Well Integrity:	Yes	No
Prot. Casing Secure	X	
Concrete Collar Intact	X	
Other		

Equipment Documentation

Purging/Sampling Equipment Used:

(✓ If Used For)

Purging	Sampling		Equipment ID
X	X	Peristaltic Pump	
		Submersible Pump	
		Bailer	
		PVC/Silicon Tubing	
X	X	Teflon/Silicon Tubing	
		Airlift	
		Hand Pump	
		In-line Filter	
		Press/Vac Filter	

Decontamination Fluids Used:

(✓ All That Apply at Location)
- ___ Methanol (100%)
- ___ 25% Methanol/75% ASTM Type II water
- X Deionized Water
- X Liquinox Solution
- ___ Hexane
- ___ HNO_3/D.I. Water Solution
- X Potable Water
- ___ None

Field Analysis Data

Ambient Air VOC: Ø ppm Well Mouth: Ø ppm
Field Data Collected: ___ In-line; X In Container
Sample Observations: X Turbid; ___ Clear; ___ Cloudy; ___ Colored; ___ Odor

Purge Data	@ 3 Gal.	@ 4 Gal.	@ 5 Gal.	@ Gal.	@ Gal.
Temperature, Deg. C	24	24	24		
pH, units	6.55	6.58	6.57		
Specific Conductivity (umhos/cm. @ 25 Deg. C.)	320	320	330		
Oxidation - Reduction, +/- mv	—	—	—		
Dissolved Oxygen, ppm	—	—	—		
TURBIDITY	>200	>200	>200		

Sample Collection Requirements
(✓ If Required at this Location)

Analytical Parameter	✓ If Field Filtered	Preservation Method	Volume Required	✓ If Sample Collected	Sample Bottle IDs
VOA		HCL	3 x 40 ml		17 / G / 008 / 01
SVOA		4OC			
Pest/PCB		4OC			
Inorganics		HNO_3			
Explosives		4°C			
TPH		H_2SO_4			
TOC		H_2SO_4			
Nitrate		H_2SO_4			

Notes:

GROUNDWATER SAMPLE FIELD DATA

Project: NTC ORLANDO
Project Number: 2530.05
Sample Location ID: 1760090 1 / 17600901
Time: Start: 1520 End: 1930

Point of Interest: SA 17 / OLD-17-09A
Date: 2/12/97
Signature of Sampler: [signature]

Water Level/Well Data

Well Depth 11 Ft. ___ Measured X Historical

X Top of Well
X Top of Protective Casing

Well Riser Stick-up — Ft. (from ground)

Protective — Ft. Casing/Well Difference

FLUSH-MOUNT MICROWELL

Protective — Ft. Casing

Depth to Water 3.9 Ft.

Well Material: X PVC ___ SS

Well Locked?: X Yes ___ No

Well Dia. ___ 2 inch ___ 4 inch ___ 6 inch X .75 "

Water Level Equip. Used: X Elect. Cond. Probe ___ Float Activated ___ Press. Transducer

Height of Water Column 7 Ft. X

X .16 Gal/Ft. (2 in.)
___ .65 Gal/Ft. (4 in.)
___ 1.5 Gal/Ft. (6 in.)
___ Gal/Ft. (__ in.)

= 2 Gal/Vol
3 Total Gal Purged

Well Integrity:	Yes	No
Prot. Casing Secure	X	
Concrete Collar Intact	X	
Other		

Equipment Documentation

Purging/Sampling Equipment Used:

(✓ If Used For)

Purging	Sampling		Equipment ID
X	X	Peristaltic Pump	
		Submersible Pump	
		Bailer	
		PVC/Silicon Tubing	
X	X	Teflon/Silicon Tubing	
		Airlift	
		Hand Pump	
		In-line Filter	
		Press/Vac Filter	

Decontamination Fluids Used:

(✓ All That Apply at Location)

___ Methanol (100%)
___ 25% Methanol/75% ASTM Type II water
X Deionized Water
X Liquinox Solution
___ Hexane
___ HNO_3/D.I. Water Solution
X Potable Water
___ None

Field Analysis Data

Ambient Air VOC 0 ppm Well Mouth 0 ppm

Field Data Collected ___ In-line X In Container

Sample Observations: X Turbid ___ Clear ___ Cloudy ___ Colored ___ Odor

Purge Data	@ 2 Gal.	@ 2.5 Gal.	@ 3 Gal.	@ ___ Gal.	@ ___ Gal.
Temperature, Deg. C	26	25.6	25.0		
pH, units	6.71	6.77	6.75		
Specific Conductivity (umhos/cm. @ 25 Deg. C.)	392 ~~383~~	383 —	370 —		
Oxidation - Reduction, +/- mv	— ~~[illegible]~~	—	—		
Dissolved Oxygen, ppm	—	—	—		

200 200 200

Sample Collection Requirements
(✓ If Required at this Location)

Analytical Parameter	✓ If Field Filtered	Preservation Method	Volume Required	✓ If Sample Collected	Sample Bottle IDs
VOA		HCL	3-40 ml		17 / 6 / 0051 / 01
SVOA		4°C			/ / /
Pest/PCB		4°C			/ / /
Inorganics		HNO_3			/ / /
Explosives		4°C			/ / /
TPH		H_2SO_4			/ / /
TOC		H_2SO_4			/ / /
Nitrate		H_2SO_4			/ / /

Notes:

GROUNDWATER SAMPLE FIELD DATA

Project: NTC- ORLANDO
Project Number: 2530.05
Sample Location ID: 17G01001
Time: Start: 0930 End: 1330

Point of Interest: SA-17 LOC-17-10C
Date: 2/12/97
Signature of Sampler: [signature]

Water Level/Well Data

Well Depth 47.5 ft. ___ Measured X Historical

X Top of Well ___ Top of Protective Casing

Well Riser Stick-up ___ ft. (from ground) FLUSH MOUNT

Protective Casing/Well Difference ___ ft.

Protective Casing ___ ft.

Depth to Water 4.67 ft.

Well Material: X PVC ___ SS

Well Locked?: X Yes ___ No

Well Dia. X 2 inch ___ 4 inch ___ 6 inch

Water Level Equip. Used: X Elect. Cond. Probe ___ Float Activated ___ Press. Transducer

Height of Water Column 42 ft. × X .16 Gal/ft. (2 in.) ___ .65 Gal/ft. (4 in.) ___ 1.5 Gal/ft. (6 in.) ___ Gal/ft. (__ in.) = ≈8 Gal/Vol; 8 Total Gal Purged

Well Integrity:

	Yes	No
Prot. Casing Secure	X	
Concrete Collar Intact	X	
Other		

Equipment Documentation

Purging/Sampling Equipment Used:

(✓ If Used For)

Purging	Sampling		Equipment ID
X	X	Peristaltic Pump	
		Submersible Pump	
		Bailer	
		PVC/Silicon Tubing	
X	X	Teflon/Silicon Tubing	
		Airlift	
		Hand Pump	
		In-line Filter	
		Press/Vac Filter	

Decontamination Fluids Used:

(✓ All That Apply at Location)

___ Methanol (100%)
___ 25% Methanol/75% ASTM Type II water
X Deionized Water
X Liquinox Solution
___ Hexane
___ HNO_3/D.I. Water Solution
X Potable Water
___ None

Field Analysis Data

Ambient Air VOC Ø ppm Well Mouth Ø ppm

Field Data Collected ___ In-line X In Container

Sample Observations: X Turbid ___ Clear ___ Cloudy ___ Colored ___ Odor

Purge Data	@ 6 Gal.	@ 7 Gal.	@ 8 Gal.	@ ___ Gal.	@ ___ Gal.
Temperature, Deg. C	27.0	27.0	26.5		
pH, units	5.94	5.95	5.92		
Specific Conductivity (umhos/cm. @ 25 Deg. C.)	220	220	220		
Oxidation - Reduction, +/- mv	—	—	—		
Dissolved Oxygen, ppm	—	—	—		
TURBIDITY	>200	>200	>200		

Sample Collection Requirements

(✓ If Required at this Location)

Analytical Parameter	✓ If Field Filtered	Preservation Method	Volume Required	✓ If Sample Collected	Sample Bottle IDs
VOA		HCL	3, 40 ml		17 / G / 010 / 01
SVOA		4C			
Pest/PCB		4C			
Inorganics		HNO_3			
Explosives		4°C			
TPH		H_2SO_4			
TOC		H_2SO_4			
Nitrate		H_2SO_4			

Notes:

GROUNDWATER SAMPLE FIELD DATA

Project: NTC ORLANDO
Point of Interest: SA17
Project Number: 02570.05
Date: 6/19/98
Sample Location ID: OLD-17-10C/17G01C02
Time: Start: 0945 End: 1115
Signature of Sampler: [signature]

Water Level/Well Data

Well Depth 44.5 Ft. ✓ Measured ___ Historical
___ Top of Well ✓ Top of Protective Casing
Well Riser Stick-up ___ Ft. (from ground)
Protective ___ Ft. Casing/Well Difference
Protective ___ Ft. Casing

Depth to Water 27.5 Ft.
Well Material: ✓ PVC ___ SS
Well Locked?: ✓ Yes ___ No
Well Dia. ✓ 2 inch ___ 4 inch ___ 6 inch
Water Level Equip. Used: ✓ Elect. Cond. Probe ___ Float Activated ___ Press. Transducer

Height of Water Column 17 Ft. X ✓ .16 Gal/Ft. (2 in.) ___ .65 Gal/Ft. (4 in.) ___ 1.5 Gal/Ft. (6 in.) ___ Gal/Ft. (__in.) = 8.0 Gal/Vol, 24 Total Gal Purged

Well Integrity: Yes No
Prot. Casing Secure ___ ___
Concrete Collar Intact ___ ___
Other ___ ___ ___

Equipment Documentation

Purging/Sampling Equipment Used:

(✓ If Used For)

Purging	Sampling		Equipment ID
	✓	Peristaltic Pump	
		Submersible Pump	
		Bailer	
		PVC/Silicon Tubing	
	✓	Teflon/Silicon Tubing	
		Airlift	
		Hand Pump	
		In-line Filter	
		Press/Vac Filter	

Decontamination Fluids Used:

(✓ All That Apply at Location)
___ Methanol (100%)
___ 25% Methanol/75% ASTM Type II water
✓ Deionized Water
✓ Liquinox Solution
___ Hexane
___ HNO_3/D.I. Water Solution
___ Potable Water
___ None

Field Analysis Data

Ambient Air VOC 0 ppm Well Mouth 0 ppm
Field Data Collected ___ In-line ✓ In Container
Sample Observations: ✓ Turbid ___ Clear ___ Cloudy ___ Colored ___ Odor

Purge Data	@ 10 Gal.	@ 13 Gal.	@ 20 Gal.	@ 22 Gal.	@ 24 Gal.
Temperature, Deg. C	25.8	26.0	26.0	26.7	26.0
pH, units	6.77	6.71	6.67	6.72	6.61
Specific Conductivity (umhos/cm. @ 25 Deg. C.)	610	625	495	445	445
Oxidation - Reduction, +/- mv					
~~Dissolved Oxygen, ppm~~ Turbidity	>100	>200	>200	>200	>200

Sample Collection Requirements
(✓ If Required at this Location)

Analytical Parameter	✓ If Field Filtered	Preservation Method	Volume Required	✓ If Sample Collected	Sample Bottle IDs
VOA		HCL	3 x 40ml	✓	17 / 6 / 010 / 03
SVOA		4oC			
Pest/PCB		4oC			
Inorganics		HNO_3			
Explosives		4°C			
TPH		H_2SO_4			
TOC		H_2SO_4			
Nitrate		H_2SO_4			

Notes: ___

GROUNDWATER SAMPLE FIELD DATA

Project: NTC ORLANDO
Point of Interest: SA17
Project Number: 02530.05
Date: 6/16/98
Sample Location ID: OLD-17-02A/17600202
Time: Start: 1245 End: 1340
Signature of Sampler: Mark Todor

Water Level/Well Data

Well Depth 15 Ft. ✓ Measured ___ Historical
___ Top of Well ✓ Top of Protective Casing
Well Riser Stick-up (from ground) ___ Ft.
Protective Casing/Well Difference ___ Ft.
Protective Casing ___ Ft.

Depth to Water 3 Ft.
Well Material: ✓ PVC ___ SS
Well Locked?: ✓ Yes ___ No
Well Dia. ✓ 2 inch ___ 4 inch ___ 6 inch
Water Level Equip. Used: ✓ Elect. Cond. Probe ___ Float Activated ___ Press. Transducer

Height of Water Column 12 Ft. X ✓ .16 Gal/Ft. (2 in.) ___ .65 Gal/Ft. (4 in.) ___ 1.5 Gal/Ft. (6 in.) ___ Gal/Ft. (__in.) = 2 Gal/Vol; 16 Total Gal Purged

Well Integrity:	Yes	No
Prot. Casing Secure	✓	
Concrete Collar Intact	✓	
Other ___		

Equipment Documentation

Purging/Sampling Equipment Used:

Purging (✓ If Used For)	Sampling (✓ If Used For)		Equipment ID
	✓	Peristaltic Pump	
		Submersible Pump	
		Bailer	
		PVC/Silicon Tubing	
	✓	Teflon/Silicon Tubing	
		Airlift	
		Hand Pump	
		In-line Filter	
		Press/Vac Filter	

Decontamination Fluids Used:

(✓ All That Apply at Location)
___ Methanol (100%)
___ 25% Methanol/75% ASTM Type II water
✓ Deionized Water
✓ Liquinox Solution
___ Hexane
___ HNO_3/D.I. Water Solution
___ Potable Water
___ None

Field Analysis Data

Ambient Air VOC 0 ppm Well Mouth 0 ppm Field Data Collected ___ In-line ✓ In Container
Sample Observations: ___ Turbid ___ Colored ___ Clear ___ Odor ___ Cloudy

Purge Data	@ 5 Gal.	@ 10 Gal.	@ 12 Gal.	@ 14 Gal.	@ 16 Gal.
Temperature, Deg. C	35.3	31.3	30.7	30.5	30.1
pH, units	6.12	6.01	6.58	6.71	6.65
Specific Conductivity (umhos/cm. @ 25 Deg. C.)	420	420	375	430	420
Oxidation - Reduction, +/- mv					
~~Dissolved Oxygen, ppm~~ Turbidity	35.2	13.8	12.9	121	10.92

Sample Collection Requirements
(✓ If Required at this Location)

Analytical Parameter	✓ If Field Filtered	Preservation Method	Volume Required	✓ If Sample Collected	Sample Bottle IDs
VOA		HCL	3 0 x 40ml	✓	17 / 6 / 002 / 02
SVOA		4C			/ / /
Pest/PCB		4C			/ / /
Inorganics		HNO_3			/ / /
Explosives		4°C			/ / /
TPH		H_2SO_4			/ / /
TOC		H_2SO_4			/ / /
Nitrate		H_2SO_4			/ / /

Notes:

GROUNDWATER SAMPLE FIELD DATA

Project: NTC-ORLANDO / SA 17
Point of Interest: OLD-17-03A
Project Number: 2530.05
Date: 6/10/98
Sample Location ID: 17G00302
Time: Start: 1000 End: 1100
Signature of Sampler: [illegible]

Water Level/Well Data

Well Depth 12.1 Ft. X Measured ___ Historical
X Top of Well ___ Top of Protective Casing
Well Riser Stick-up — Ft. (from ground)
FLUSH-MOUNT
Protective — Ft. Casing/Well Difference
Protective — Ft. Casing

Depth to Water 4.05 Ft.
Well Material: X PVC ___ SS
Well Locked?: X Yes ___ No
Well Dia. X 2 inch ___ 4 inch ___ 6 inch
Water Level Equip. Used: X Elect. Cond. Probe ___ Float Activated ___ Press. Transducer

Height of Water Column X Ft. X X .16 Gal/Ft. (2 in.) ___ .65 Gal/Ft. (4 in.) ___ 1.5 Gal/Ft. (6 in.) ___ Gal/Ft. (__ in.) = 2 Gal/Vol; 12 Total Gal Purged

Well Integrity: Yes / No
Prot. Casing Secure: X
Concrete Collar Intact: X
Other ___

Equipment Documentation

Purging/Sampling Equipment Used:

(✓ If Used For)

Purging	Sampling		Equipment ID
X	X	Peristaltic Pump	
—	—	Submersible Pump	
—	—	Bailer	
		PVC/Silicon Tubing	
X	X	Teflon/Silicon Tubing	
—	—	Airlift	
—	—	Hand Pump	
—	—	In-line Filter	
—	—	Press/Vac Filter	

Decontamination Fluids Used:

(✓ All That Apply at Location)
___ Methanol (100%)
___ 25% Methanol/75% ASTM Type II water
X Deionized Water
X Liquinox Solution
___ Hexane
___ HNO_3/D.I. Water Solution
X Potable Water
___ None

Field Analysis Data

Ambient Air VOC Ø ppm Well Mouth Ø ppm Field Data Collected ___ In-line X In Container
Sample Observations: ___ Turbid X Clear ___ Cloudy ___ Colored ___ Odor

Purge Data	@ 4 Gal.	@ 6 Gal.	@ 8 Gal.	@ 10 Gal.	@ 12 Gal.
Temperature, Deg. C	26.6	27.0	26.1	26.7	26.9
pH, units	5.77	6.19	5.81	6.11	6.11
Specific Conductivity (umhos/cm. @ 25 Deg. C.)	357	315	295	288	290
Oxidation - Reduction, +/- mv	—	—	—	—	—
Dissolved Oxygen, ppm	—	—	—	—	—
TURBIDITY	72.3	21.5	14.5	12.45	3.99

Sample Collection Requirements

(✓ If Required at this Location)

Analytical Parameter	✓ If Field Filtered	Preservation Method	Volume Required	✓ If Sample Collected	Sample Bottle IDs
VOA		HCL			17G00302
SVOA		4ºC			
Pest/PCB		4ºC			
Inorganics		HNO_3			
Explosives		4ºC			
TPH		H_2SO_4			
TOC		H_2SO_4			
Nitrate		H_2SO_4			

Notes:

GROUNDWATER SAMPLE FIELD DATA

Project: NTC Orlando
Point of Interest: SA17
Project Number: 02530.05
Date: 6/19/98
Sample Location ID: OLD-17-04A117(00404)
Time: Start: 0923 End: 1005
Signature of Sampler: [signature]

Water Level/Well Data

Well Depth 12.4 Ft. ✓ Measured ___ Historical
___ Top of Well ✓ Top of Protective Casing
Well Riser Stick-up ___ Ft. (from ground)
Protective Casing/Well Difference ___ Ft.
Protective Casing ___ Ft.

Depth to Water 2.35 Ft.
Well Material: ✓ PVC ___ SS
Well Locked?: ✓ Yes ___ No
Well Dia. ✓ 2 inch ___ 4 inch ___ 6 inch
Water Level Equip. Used: ✓ Elect. Cond. Probe ___ Float Activated ___ Press. Transducer

Height of Water Column 10 Ft. X ✓ .16 Gal/Ft. (2 in.) ___ .65 Gal/Ft. (4 in.) ___ 1.5 Gal/Ft. (6 in.) ___ Gal/Ft. (__ in.) = 1.6 Gal/Vol; 13 Total Gal Purged

Well Integrity:	Yes	No
Prot. Casing Secure	✓	
Concrete Collar Intact	✓	
Other ______		

Equipment Documentation

Purging/Sampling Equipment Used:

(✓ If Used For)

Purging	Sampling	Equipment	Equipment ID
	✓	Peristaltic Pump	
		Submersible Pump	
		Bailer	
		PVC/Silicon Tubing	
	✓	Teflon/Silicon Tubing	
		Airlift	
		Hand Pump	
		In-line Filter	
		Press/Vac Filter	

Decontamination Fluids Used:

(✓ All That Apply at Location)

___ Methanol (100%)
___ 25% Methanol/75% ASTM Type II water
✓ Deionized Water
✓ Liquinox Solution
___ Hexane
___ HNO_3/D.I. Water Solution
___ Potable Water
___ None

Field Analysis Data

Ambient Air VOC 0 ppm Well Mouth 1 ppm
Field Data Collected ___ In-line X In Container
Sample Observations: ✓ Turbid ___ Clear ___ Cloudy ___ Colored ___ Odor

Purge Data	@ 5 Gal.	@ 7 Gal.	@ 9 Gal.	@ 11 Gal.	@ 13 Gal.
Temperature, Deg. C	27.3	25.3	25.6	25.7	25.9
pH, units	6.31	6.48	6.55	6.37	6.32
Specific Conductivity (umhos/cm. @ 25 Deg. C.)	299	302	305	300	302
Oxidation - Reduction, +/- mv					
~~Dissolved Oxygen, ppm~~ Turbidity	96.0	76.4	16.77	18.50	16.60

Sample Collection Requirements
(✓ If Required at this Location)

Analytical Parameter	✓ If Field Filtered	Preservation Method	Volume Required	✓ If Sample Collected	Sample Bottle IDs
VOA		HCL	3x40ml	✓	17 / 6 / 004 / 04
SVOA		4OC			/ / /
Pest/PCB		4OC			/ / /
Inorganics		HNO_3			/ / /
Explosives		4°C			/ / /
TPH		H_2SO_4			/ / /
TOC		H_2SO_4			/ / /
Nitrate		H_2SO_4			/ / /

Notes:

GROUNDWATER SAMPLE FIELD DATA

Project: NTC Orlando
Project Number: 2538.05
Sample Location ID: 17G-01301
Time: Start: 1130 End: 1300

Point of Interest: OLD-17-13B
Date: 6/10/98
Signature of Sampler: [signature]

Water Level/Well Data

Well Depth 19.60 ft. X Measured ___ Historical

X Top of Well ___ Top of Protective Casing

Well Riser Stick-up — ft. (from ground) FLUSH-MOUNT

Protective — ft. Casing/Well Difference

Protective — ft. Casing

Depth to Water 4.25 ft.

Well Material: X PVC ___ SS

Well Locked?: X Yes ___ No

Well Dia. X 2 inch ___ 4 inch ___ 6 inch

Water Level Equip. Used: X Elect. Cond. Probe ___ Float Activated ___ Press. Transducer

Height of Water Column 15 ft. x X .16 Gal/ft. (2 in.) ___ .65 Gal/ft. (4 in.) ___ 1.5 Gal/ft. (6 in.) ___ Gal/ft. (__in.) = [4 Gal/Vol ; 15 Total Gal Purged]

Well Integrity:	Yes	No
Prot. Casing Secure	X	
Concrete Collar Intact	X	
Other ___		

Equipment Documentation

Purging/Sampling Equipment Used:

(✓ If Used For)

Purging	Sampling		Equipment ID
X	X	Peristaltic Pump	
		Submersible Pump	
		Bailer	
		PVC/Silicon Tubing	
X	X	Teflon/Silicon Tubing	
		Airlift	
		Hand Pump	
		In-line Filter	
		Press/Vac Filter	

Decontamination Fluids Used:

(✓ All That Apply at Location)

___ Methanol (100%)
___ 25% Methanol/75% ASTM Type II water
X Deionized Water
X Liquinox Solution
___ Hexane
___ HNO_3/D.I. Water Solution
X Potable Water
___ None

Field Analysis Data

Ambient Air VOC 0 ppm Well Mouth 0 ppm Field Data Collected ___ In-line X In Container

Sample Observations: X Turbid ___ Clear ___ Cloudy ___ Colored ___ Odor

Purge Data	@ 5 Gal.	@ 8 Gal.	@ 11 Gal.	@ 13 Gal.	@ 15 Gal.
Temperature, Deg. C	26.1	26.2	26.9	25.9	25.9
pH, units	5.77	5.76	5.81	5.77	5.75
Specific Conductivity (umhos/cm. @ 25 Deg. C.)	266	176	185	181	181
Oxidation - Reduction, +/- mv	—	—	—	—	—
Dissolved Oxygen, ppm	—	—	—	—	—
TURBIDITY	7200	7200	7200	7200	7200

Sample Collection Requirements

(✓ If Required at this Location)

Analytical Parameter	✓ If Field Filtered	Preservation Method	Volume Required	✓ If Sample Collected	Sample Bottle IDs
VOA		HCL	3x40 ml		17 / G / 013 / 01
SVOA		4OC			/ / /
Pest/PCB		4OC			/ / /
Inorganics		HNO_3			/ / /
Explosives		4°C			/ / /
TPH		H_2SO_4			/ / /
TOC		H_2SO_4			/ / /
Nitrate		H_2SO_4			/ / /

Notes:

GROUNDWATER SAMPLE FIELD DATA

Project: NTC - ORLANDO
Project Number: 17601401
Sample Location ID: 2530.55
Time: Start: 1000 End: 1300
Point of Interest: OLD-17-14C
Date: 6/10/98
Signature of Sampler: [signature]

Water Level/Well Data

Well Depth 48.50 Ft. X Measured __ Historical
X Top of Well __ Top of Protective Casing
Well Riser Stick-up — Ft. (from ground)
Protective — Ft. Casing/Well Difference
FLUSH MOUNT
Protective — Ft. Casing

Depth to Water 5.46 Ft.
Well Material: X PVC __ SS
Well Locked?: X Yes __ No
Well Dia. X 2 inch __ 4 inch __ 6 inch
Water Level Equip. Used: X Elect. Cond. Probe __ Float Activated __ Press. Transducer

Height of Water Column 43 Ft. X [X .16 Gal/Ft. (2 in.) __ .65 Gal/Ft. (4 in.) __ 1.5 Gal/Ft. (6 in.) __ Gal/Ft. (__ in.)] = 10 Gal/Vol; 35 Total Gal Purged

Well Integrity:	Yes	No
Prot. Casing Secure	X	
Concrete Collar Intact	X	
Other		

Equipment Documentation

Purging/Sampling Equipment Used:

(✓ If Used For)

Purging	Sampling		Equipment ID
X	X	Peristaltic Pump	
		Submersible Pump	
		Bailer	
		PVC/Silicon Tubing	
X	X	Teflon/Silicon Tubing	
		Airlift	
		Hand Pump	
		In-line Filter	
		Press/Vac Filter	

Decontamination Fluids Used:

(✓ All That Apply at Location)
- __ Methanol (100%)
- __ 25% Methanol/75% ASTM Type II water
- X Deionized Water
- X Liquinox Solution
- __ Hexane
- __ HNO_3/D.I. Water Solution
- X Potable Water
- __ None

Field Analysis Data

Ambient Air VOC 0 ppm Well Mouth 0 ppm
Field Data Collected __ In-line X In Container
Sample Observations: __ Turbid X Clear __ Cloudy __ Colored __ Odor

Purge Data	@ 15 Gal.	@ 20 Gal.	@ 25 Gal.	@ 30 Gal.	@ 35 Gal.
Temperature, Deg. C	26.7	26.6	26.5	25.9	26.8
pH, units	5.57	5.32	5.44	5.66	5.54
Specific Conductivity (umhos/cm. @ 25 Deg. C.)	175	175	175	175	175
Oxidation - Reduction, +/- mv	—	—	—	—	—
Dissolved Oxygen, ppm	—	—	—	—	—
TURBIDITY	14.0	28.4	11.4	26.6	21.7

Sample Collection Requirements
(✓ If Required at this Location)

Analytical Parameter	✓ If Field Filtered	Preservation Method	Volume Required	✓ If Sample Collected	Sample Bottle IDs
VOA		HCL	3x40 ml		17 / G / 014 / 01
SVOA		4OC			/ / /
Pest/PCB		4OC			/ / /
Inorganics		HNO_3			/ / /
Explosives		4°C			/ / /
TPH		H_2SO_4			/ / /
TOC		H_2SO_4			/ / /
Nitrate		H_2SO_4			/ / /

Notes:

GROUNDWATER SAMPLE FIELD DATA

Project: NTC ORLANDO
Project Number: 2530.05
Sample Location ID: 17G01501
Time: Start: 0900 End: 1200
Point of Interest: OLD-17-15A
Date: 6/9/98
Signature of Sampler: [signature]

Water Level/Well Data

Well Depth 117 Ft. X Measured ___ Historical X Top of Well ___ Top of Protective Casing

Well Riser Stick-up — Ft. (from ground) FLUSH MOUNT

Protective — Ft. Casing/Well Difference

Protective — Ft. Casing

Depth to Water 2.98 Ft.

Well Material: X PVC ___ SS

Well Locked?: X Yes ___ No

Well Dia. X 2 inch ___ 4 inch ___ 6 inch

Water Level Equip. Used: X Elect. Cond. Probe ___ Float Activated ___ Press. Transducer

Height of Water Column 8 Ft. x X .16 Gal/Ft. (2 in.) ___ .65 Gal/Ft. (4 in.) ___ 1.5 Gal/Ft. (6 in.) ___ Gal/Ft. (__ in.) = 2 Gal/Vol; 10 Total Gal Purged

Well Integrity:	Yes	No
Prot. Casing Secure	X	—
Concrete Collar Intact	X	—
Other	X	—

Equipment Documentation

Purging/Sampling Equipment Used:

(✓ If Used For)

Purging	Sampling		Equipment ID
X	X	Peristaltic Pump	
—	—	Submersible Pump	
—	—	Bailer	
—	—	PVC/Silicon Tubing	
X	X	Teflon/Silicon Tubing	
—	—	Airlift	
—	—	Hand Pump	
—	—	In-line Filter	
—	—	Press/Vac Filter	

Decontamination Fluids Used:

(✓ All That Apply at Location)

- ___ Methanol (100%)
- ___ 25% Methanol/75% ASTM Type II water
- X Deionized Water
- X Liquinox Solution
- ___ Hexane
- ___ HNO_3/D.I. Water Solution
- X Potable Water
- ___ None

Field Analysis Data

Ambient Air VOC Ø ppm Well Mouth Ø ppm Field Data Collected ___ In-line X In Container

Sample Observations: ___ Turbid ___ Colored ___ Clear ___ Odor X Cloudy

Purge Data	@ 2 Gal.	@ 4 Gal.	@ 6 Gal.	@ 8 Gal.	@ 10 Gal.
Temperature, Deg. C	27.4	28.0	28.0	27.8	28.5
pH, units	5.72	5.35	5.39	5.47	5.44
Specific Conductivity (umhos/cm. @ 25 Deg. C.)	118	111	121	129	129
Oxidation - Reduction, +/- mv	—	—	—	—	—
Dissolved Oxygen, ppm	—	—	—	—	—
TURBIDITY	61.8	84.6	95.7	97.8	98.3

Sample Collection Requirements

(✓ If Required at this Location)

Analytical Parameter	✓ If Field Filtered	Preservation Method	Volume Required	✓ If Sample Collected	Sample Bottle IDs
VOA	—	HCl	3x40 ML	—	17 / G / 015 / 01
SVOA	—	4C		—	/ / /
Pest/PCB	—	4C		—	/ / /
Inorganics	—	HNO_3		—	/ / /
Explosives	—	4°C		—	/ / /
TPH	—	H_2SO_4		—	/ / /
TOC	—	H_2SO_4		—	/ / /
Nitrate	—	H_2SO_4		—	/ / /

Notes:

GROUNDWATER SAMPLE FIELD DATA

Project: NTC - ORLANDO
Project Number: 2530.05
Sample Location ID: 17G01601
Time: Start: 1200 End: 1700
Point of Interest: OLD-17-16B
Date: 6/19/98
Signature of Sampler: [signature]

Water Level/Well Data

Well Depth 19.60 ft. X Measured ___ Historical
X Top of Well ___ Top of Protective Casing
Well Riser Stick-up — ft. (from ground) FLUSH-MOUNT
Protective — ft. Casing/Well Difference
Protective — ft. Casing

Depth to Water 3.03 ft.
Well Material: X PVC ___ SS
Well Locked?: X Yes ___ No
Well Dia. X 2 inch ___ 4 inch ___ 6 inch
Water Level Equip. Used: X Elect. Cond. Probe ___ Float Activated ___ Press. Transducer

Height of Water Column 16 ft. X [X .16 Gal/ft. (2 in.) ___ .65 Gal/ft. (4 in.) ___ 1.5 Gal/ft. (6 in.) ___ Gal/ft. (__ in.)] = 4 Gal/Vol; 22 Total Gal Purged

Well Integrity: | Yes | No
Prot. Casing Secure | X |
Concrete Collar Intact | X |
Other ___

Equipment Documentation

Purging/Sampling Equipment Used:

(✓ If Used For)

Purging	Sampling		Equipment ID
X	X	Peristaltic Pump	
		Submersible Pump	
		Bailer	
		PVC/Silicon Tubing	
X	X	Teflon/Silicon Tubing	
		Airlift	
		Hand Pump	
		In-line Filter	
		Press/Vac Filter	

Decontamination Fluids Used:

(✓ All That Apply at Location)

- ___ Methanol (100%)
- ___ 25% Methanol/75% ASTM Type II water
- X Deionized Water
- X Liquinox Solution
- ___ Hexane
- ___ HNO_3/D.I. Water Solution
- X Potable Water
- ___ None

Field Analysis Data

Ambient Air VOC Ø ppm Well Mouth Ø ppm
Field Data Collected ___ In-line X In Container
Sample Observations: X Turbid ___ Clear ___ Cloudy ___ Colored ___ Odor

Purge Data	@ 5 Gal.	@ 10 Gal.	@ 14 Gal.	@ 18 Gal.	@ 22 Gal.
Temperature, Deg. C	26.5	27.1	26.5	26.5	26.1
pH, units	5.55	5.42	5.54	5.57	5.61
Specific Conductivity (umhos/cm. @ 25 Deg. C.)	166	155	202	283	198
Oxidation - Reduction, +/- mv	—	—	—	—	—
Dissolved Oxygen, ppm	—	—	—	—	—
TURBIDITY	7200	7200	7200	7250	7200

Sample Collection Requirements

(✓ If Required at this Location)

Analytical Parameter	✓ If Field Filtered	Preservation Method	Volume Required	✓ If Sample Collected	Sample Bottle IDs
VOA		HCL	3-40ML VIALS		17 / G / 016 / 01
SVOA		4oC			
Pest/PCB		4oC			
Inorganics		HNO_3			
Explosives		4°C			
TPH		H_2SO_4			
TOC		H_2SO_4			
Nitrate		H_2SO_4			

Notes:

GROUNDWATER SAMPLE FIELD DATA

Project: [illegible]
Project Number: [illegible]
Sample Location ID: [illegible]
Time: Start: [illegible] End: [illegible]

Point of Interest: 6D-17-17C
Date: 6/9/98
Signature of Sampler: [illegible signature]

Water Level/Well Data

Well Depth [illegible] ft. X Measured ___ Historical ___ X Top of Well ___ Top of Protective Casing

Well Riser Stick-up ___ ft. (from ground)

FLUSH-MOUNT

Protective ___ ft. Casing/Well Difference

Protective ___ ft. Casing

Depth to Water 32 ft.

Well Material: X PVC ___ SS

Well Locked?: X Yes ___ No

Well Dia. X 2 inch ___ 4 inch ___ 6 inch

Water Level Equip. Used: X Elect. Cond. Probe ___ Float Activated ___ Press. Transducer

Height of Water Column 46 ft. X X .16 Gal/ft. (2 in.) ___ .65 Gal/ft. (4 in.) ___ 1.5 Gal/ft. (6 in.) ___ Gal/ft. (__ in.) = 10 Gal/Vol; 40 Total Gal Purged

Well Integrity:	Yes	No
Prot. Casing Secure	X	
Concrete Collar Intact	X	
Other		

Equipment Documentation

Purging/Sampling Equipment Used:

(✓ If Used For)

Purging	Sampling		Equipment ID
X	X	Peristaltic Pump	
		Submersible Pump	
		Bailer	
		PVC/Silicon Tubing	
X	X	Teflon/Silicon Tubing	
		Airlift	
		Hand Pump	
		In-line Filter	
		Press/Vac Filter	

Decontamination Fluids Used:

(✓ All That Apply at Location)

___ Methanol (100%)
___ 25% Methanol/75% ASTM Type II water
X Deionized Water
X Liquinox Solution
___ Hexane
___ HNO_3/D.I. Water Solution
X Potable Water
___ None

Field Analysis Data

Ambient Air VOC Ø ppm Well Mouth Ø ppm Field Data Collected ___ In-line X In Container

Sample Observations: X Turbid ___ Clear ___ Cloudy ___ Colored ___ Odor

Purge Data	@ 5 Gal.	@ 10 Gal.	@ 20 Gal.	@ 30 Gal.	@ 40 Gal.
Temperature, Deg. C	26.4	26.6	27.0	26.2	27.5
pH, units	5.6	5.61	5.79	5.66	5.49
Specific Conductivity (umhos/cm. @ 25 Deg. C.)	238	244	280	280	290
Oxidation - Reduction, +/- mv	—	—	—	—	—
Dissolved Oxygen, ppm	—	—	—	—	—
TURBIDITY	7200	7200	7200	7200	7200

Sample Collection Requirements

(✓ If Required at this Location)

Analytical Parameter	✓ If Field Filtered	Preservation Method	Volume Required	✓ If Sample Collected	Sample Bottle IDs
VOA		HCL	3x40 ML		17 / G / 017 / 01
SVOA		4OC			/ / /
Pest/PCB		4OC			/ / /
Inorganics		HNO_3			/ / /
Explosives		4°C			/ / /
TPH		H_2SO_4			/ / /
TOC		H_2SO_4			/ / /
Nitrate		H_2SO_4			/ / /

Notes: ___

GROUNDWATER SAMPLE FIELD DATA

Project: [illegible]
Project Number: [illegible]
Sample Location ID: [illegible]
Time: Start: [illegible] End: 1400

Point of Interest: SA 17 / 61D-17-18A
Date: 6/11/98
Signature of Sampler: [illegible]

Water Level/Well Data

Well Depth 14.5 Ft. X Measured / ___ Historical
X Top of Well / ___ Top of Protective Casing

Well Riser Stick-up — Ft. (from ground)
FLUSH-MOUNT

Protective — Ft. Casing/Well Difference
Protective — Ft. Casing

Depth to Water 4.62 Ft.
Well Material: X PVC ___ SS
Well Locked?: X Yes ___ No
Well Dia. X 2 inch ___ 4 inch ___ 6 inch
Water Level Equip. Used: X Elect. Cond. Probe ___ Float Activated ___ Press. Transducer

Height of Water Column 7 Ft. X [X .16 Gal/Ft. (2 in.) ___ .65 Gal/Ft. (4 in.) ___ 1.5 Gal/Ft. (6 in.) ___ Gal/Ft. (__ in.)] = 2.5 Gal/Vol; 13 Total Gal Purged

Well Integrity:	Yes	No
Prot. Casing Secure	X	
Concrete Collar Intact	X	
Other		

Equipment Documentation

Purging/Sampling Equipment Used:

(✓ If Used For)

Purging	Sampling		Equipment ID
X	X	Peristaltic Pump	
		Submersible Pump	
		Bailer	
		PVC/Silicon Tubing	
X	X	Teflon/Silicon Tubing	
		Airlift	
		Hand Pump	
		In-line Filter	
		Press/Vac Filter	

Decontamination Fluids Used:

(✓ All That Apply at Location)
- ___ Methanol (100%)
- ___ 25% Methanol/75% ASTM Type II water
- X Deionized Water
- X Liquinox Solution
- ___ Hexane
- ___ HNO_3/D.I. Water Solution
- X Potable Water
- ___ None

Field Analysis Data

Ambient Air VOC Ø ppm Well Mouth Ø ppm Field Data Collected ___ In-line X In Container

Sample Observations: ___ Turbid X Clear ___ Cloudy ___ Colored ___ Odor

Purge Data	@ 5 Gal.	@ 7 Gal.	@ 9 Gal.	@ 11 Gal.	@ 13 Gal.
Temperature, Deg. C	28.9	28.0	27.8	28.4	28.1
pH, units	5.61	6.07	5.74	6.[illegible]	6.27
Specific Conductivity (umhos/cm. @ 25 Deg. C.)	192	230	235	242	232
Oxidation - Reduction, +/- mv	—	—	—	—	—
Dissolved Oxygen, ppm	—	—	—	—	—
TURBIDITY	131.0	43.2	18.0	9.54	8.65

Sample Collection Requirements

(✓ If Required at this Location)

Analytical Parameter	✓ If Field Filtered	Preservation Method	Volume Required	✓ If Sample Collected	Sample Bottle IDs
VOA		HCL	3x40 ML		17 / G / 08 / 01
SVOA		4OC			
Pest/PCB		4OC			
Inorganics		HNO_3			
Explosives		4°C			
TPH		H_2SO_4			
TOC		H_2SO_4			
Nitrate		H_2SO_4			

Notes:

GROUNDWATER SAMPLE FIELD DATA

Project: NTC-ORLANDO
Project Number: 2530.05
Sample Location ID: MGO19D1
Time: Start: 0900 End: 1200

Point of Interest: SA 17/OU-17-19D
Date: 6/11/98
Signature of Sampler: [signature]

Water Level/Well Data

Well Depth 29.60 Ft. X Measured ___ Historical

X Top of Well ___ Top of Protective Casing

Well Riser Stick-up — Ft. (from ground) FLUSH-MOUNT

Protective — Ft. Casing/Well Difference

Protective — Ft. Casing

Depth to Water 6.40 Ft.

Well Material: X PVC ___ SS

Well Locked?: X Yes ___ No

Well Dia. X 2 inch ___ 4 inch ___ 6 inch

Water Level Equip. Used: X Elect. Cond. Probe ___ Float Activated ___ Press. Transducer

Height of Water Column 23 Ft. X ___ .16 Gal/Ft. (2 in.) ___ .65 Gal/Ft. (4 in.) ___ 1.5 Gal/Ft. (6 in.) ___ Gal/Ft. (__ in.) = 6 Gal/Vol; 30 Total Gal Purged

Well Integrity:	Yes	No
Prot. Casing Secure	X	
Concrete Collar Intact	X	
Other		

Equipment Documentation

Purging/Sampling Equipment Used:

(✓ If Used For)

Purging	Sampling		Equipment ID
X	X	Peristaltic Pump	
		Submersible Pump	
		Bailer	
		PVC/Silicon Tubing	
X	X	Teflon/Silicon Tubing	
		Airlift	
		Hand Pump	
		In-line Filter	
		Press/Vac Filter	

Decontamination Fluids Used:

(✓ All That Apply at Location)

- ___ Methanol (100%)
- ___ 25% Methanol/75% ASTM Type II water
- X Deionized Water
- X Liquinox Solution
- ___ Hexane
- ___ HNO_3/D.I. Water Solution
- X Potable Water
- ___ None

Field Analysis Data

Ambient Air VOC 0 ppm Well Mouth 0 ppm Field Data Collected ___ In-line X In Container

Sample Observations: X Turbid ___ Clear ___ Cloudy ___ Colored ___ Odor

Purge Data	@ 5 Gal.	@ 15 Gal.	@ 20 Gal.	@ 25 Gal.	@ 30 Gal.
Temperature, Deg. C	26.7	26.3	26.7	27.3	27.0
pH, units	[illegible]	[illegible]	5.66	5.53	5.58
Specific Conductivity (umhos/cm. @ 25 Deg. C.)	115	135	145	142	171
Oxidation - Reduction, +/- mv	—	—	—	—	—
Dissolved Oxygen, ppm	—	—	—	—	—
TURBIDITY	7.00	7.00	7.00	7.00	7.00

Sample Collection Requirements

(✓ If Required at this Location)

Analytical Parameter	✓ If Field Filtered	Preservation Method	Volume Required	✓ If Sample Collected	Sample Bottle IDs
VOA		HCL	2x40 ML		17 / F / 09 / C1
SVOA		4OC			
Pest/PCB		4OC			
Inorganics		HNO_3			
Explosives		4°C			
TPH		H_2SO_4			
TOC		H_2SO_4			
Nitrate		H_2SO_4			

Notes:

GROUNDWATER SAMPLE FIELD DATA

Project: NTC - ORLANDO
Project Number: 2530.05
Sample Location ID: 17G02001
Time: Start: 0930 End: 1330

Point of Interest: OLD-17-20C
Date: 6/11/98
Signature of Sampler: [illegible signature]

Water Level/Well Data

Well Depth 57.60 Ft. X Measured __ Historical
X Top of Well __ Top of Protective Casing
Well Riser Stick-up __ Ft. (from ground) FLUSH-MOUNT
Protective Casing/Well Difference __ Ft.
Protective Casing __ Ft.

Depth to Water 7.06 Ft.
Well Material: X PVC __ SS
Well Locked?: X Yes __ No
Well Dia. X 2 inch __ 4 inch __ 6 inch
Water Level Equip. Used: X Elect. Cond. Probe __ Float Activated __ Press. Transducer

Height of Water Column 44 Ft. X [X .16 Gal/Ft. (2 in.) __ .65 Gal/Ft. (4 in.) __ 1.5 Gal/Ft. (6 in.) __ Gal/Ft. (__ in.)] = 11 Gal/Vol; 30 Total Gal Purged

Well Integrity:	Yes	No
Prot. Casing Secure	X	
Concrete Collar Intact	X	
Other		

Equipment Documentation

Purging/Sampling Equipment Used:

(✓ If Used For)

Purging	Sampling		Equipment ID
X	X	Peristaltic Pump	
		Submersible Pump	
		Bailer	
		PVC/Silicon Tubing	
X	X	Teflon/Silicon Tubing	
		Airlift	
		Hand Pump	
		In-line Filter	
		Press/Vac Filter	

Decontamination Fluids Used:

(✓ All That Apply at Location)

- __ Methanol (100%)
- __ 25% Methanol/75% ASTM Type II water
- X Deionized Water
- X Liquinox Solution
- __ Hexane
- __ HNO_3/D.I. Water Solution
- X Potable Water
- __ None

Field Analysis Data

Ambient Air VOC Ø ppm Well Mouth Ø ppm
Field Data Collected __ In-line X In Container
Sample Observations: __ Turbid X Clear __ Cloudy __ Colored __ Odor

Purge Data	@ 10 Gal.	@ 15 Gal.	@ 20 Gal.	@ 25 Gal.	@ 30 Gal.
Temperature, Deg. C	26.1	27.8	27.9	27.9	27.7
pH, units	5.45	5.44	5.46	5.45	5.55
Specific Conductivity (umhos/cm. @ 25 Deg. C.)	145	142	142	142	145
Oxidation - Reduction, +/- mv	—	—	—	—	—
Dissolved Oxygen, ppm	—	—	—	—	—
TURBIDITY	113.9	47.4	21.6	19.9	15.8

Sample Collection Requirements

(✓ If Required at this Location)

Analytical Parameter	✓ If Field Filtered	Preservation Method	Volume Required	✓ If Sample Collected	Sample Bottle IDs
VOA		HCL	3x40 ML		17 / G / 02 / 01
SVOA		4OC			/ / /
Pest/PCB		4OC			/ / /
Inorganics		HNO_3			/ / /
Explosives		4°C			/ / /
TPH		H_2SO_4			/ / /
TOC		H_2SO_4			/ / /
Nitrate		H_2SO_4			/ / /

Notes:

GROUNDWATER SAMPLE FIELD DATA

Project: NTC ORLANDO
Point of Interest: 5A17
Project Number: 02530.05
Date: 6/16/98
Sample Location ID: OLD-17-21B/17G02101
Time: Start: 1000 End: 1215
Signature of Sampler: Mark Trodon

Water Level/Well Data

Well Depth 19.0 Ft. ✓ Measured ___ Historical
___ Top of Well ✓ Top of Protective Casing
Well Riser Stick-up ___ Ft. (from ground)
Protective ___ Ft. Casing/Well Difference
Protective ___ Ft. Casing

Depth to Water 8.85 Ft.
Well Material: ✓ PVC ___ SS
Well Locked?: ✓ Yes ___ No
Well Dia. ✓ 2 inch ___ 4 inch ___ 6 inch
Water Level Equip. Used: ✓ Elect. Cond. Probe ___ Float Activated ___ Press. Transducer

Height of Water Column 11 Ft. X ✓ .16 Gal/Ft. (2 in.) ___ .65 Gal/Ft. (4 in.) ___ 1.5 Gal/Ft. (6 in.) ___ Gal/Ft. (__in.) = 1.8 Gal/Vol; 24 Total Gal Purged

Well Integrity:	Yes	No
Prot. Casing Secure	✓	
Concrete Collar Intact	✓	
Other		

Equipment Documentation

Purging/Sampling Equipment Used:

Purging	Sampling	(✓ If Used For)	Equipment ID
	✓	Peristaltic Pump	
		Submersible Pump	
		Bailer	
	✓	PVC/Silicon Tubing	
	✓	Teflon/Silicon Tubing	
		Airlift	
		Hand Pump	
		In-line Filter	
		Press/Vac Filter	

Decontamination Fluids Used:

(✓ All That Apply at Location)
___ Methanol (100%)
___ 25% Methanol/75% ASTM Type II water
✓ Deionized Water
✓ Liquinox Solution
___ Hexane
___ HNO_3/D.I. Water Solution
___ Potable Water
___ None

Field Analysis Data

Ambient Air VOC ___ ppm Well Mouth ___ ppm Field Data Collected ___ In-line ___ In Container
Sample Observations: ✓ Turbid ___ Clear ___ Cloudy ___ Colored ___ Odor

Purge Data	@ 8 Gal.	@ 15 Gal.	@ 20 Gal.	@ 22 Gal.	@ 24 Gal.
Temperature, Deg. C	28.8	27.6	27.4	27.5	28.0
pH, units	6.15	5.87	5.63	5.75	5.67
Specific Conductivity (umhos/cm. @ 25 Deg. C.)	258	255	250	250	240
Oxidation - Reduction, +/- mv					
~~Dissolved Oxygen, ppm~~ Turbidity	>200	>200	>200	>200	>200

Sample Collection Requirements
(✓ If Required at this Location)

Analytical Parameter	✓ If Field Filtered	Preservation Method	Volume Required	✓ If Sample Collected	Sample Bottle IDs
VOA		HCL	3x40ml	✓	17 / G / 021 / 01
SVOA		4oC			
Pest/PCB		4oC			
Inorganics		HNO_3			
Explosives		4°C			
TPH		H_2SO_4			
TOC		H_2SO_4			
Nitrate		H_2SO_4			

Notes:

GROUNDWATER SAMPLE FIELD DATA

Project: NTC ORLANDO
Point of Interest: SA17
Project Number: 02530.05
Date: 6/16/98
Sample Location ID: OLD-17-22C/17G02201
Time: Start: 1005 End: 1330
Signature of Sampler: [signature]

Water Level/Well Data

Well Depth 42 Ft. ✓ Measured ___ Historical
___ Top of Well ✓ Top of Protective Casing
Well Riser Stick-up ___ Ft. (from ground)
Protective ___ Ft. Casing/Well Difference
Protective ___ Ft. Casing

Depth to Water 5.2 Ft.
Well Material: ___ PVC ___ SS
Well Locked?: ___ Yes ___ No
Well Dia. ✓ 2 inch ___ 4 inch ___ 6 inch
Water Level Equip. Used: ✓ Elect. Cond. Probe ___ Float Activated ___ Press. Transducer

Height of Water Column 36.8 Ft. X ✓ .16 Gal/Ft. (2 in.) ___ .65 Gal/Ft. (4 in.) ___ 1.5 Gal/Ft. (6 in.) ___ Gal/Ft. (__ in.) = [7.5 Gal/Vol, 45 Total Gal Purged]

Well Integrity:	Yes	No
Prot. Casing Secure	✓	
Concrete Collar Intact	✓	
Other ___		

Equipment Documentation

Purging/Sampling Equipment Used:

(✓ If Used For)

Purging	Sampling		Equipment ID
	✓	Peristaltic Pump	
		Submersible Pump	
		Bailer	
		PVC/Silicon Tubing	
	✓	Teflon/Silicon Tubing	
		Airlift	
		Hand Pump	
		In-line Filter	
		Press/Vac Filter	

Decontamination Fluids Used:

(✓ All That Apply at Location)

- ___ Methanol (100%)
- ___ 25% Methanol/75% ASTM Type II water
- ✓ Deionized Water
- ✓ Liquinox Solution
- ___ Hexane
- ___ HNO_3/D.I. Water Solution
- ___ Potable Water
- ___ None

Field Analysis Data

Ambient Air VOC ___ ppm Well Mouth ___ ppm Field Data Collected ___ In-line ___ In Container

Sample Observations: ✓ Turbid ___ Clear ___ Cloudy ___ Colored ___ Odor

Purge Data	@ 6 Gal.	@ 20 Gal.	@ 30 Gal.	@ 35 Gal.	@ 40 Gal.
Temperature, Deg. C	27.9	27.6	28.6	27.8	27.4
pH, units	6.21	5.90	5.86	5.76	5.79
Specific Conductivity (umhos/cm. @ 25 Deg. C.)	337	255	200	200	199
Oxidation - Reduction, +/- mv					
~~Dissolved Oxygen, ppm~~ Turbidity	>200	>200	>200	>200	>200

Sample Collection Requirements

(✓ If Required at this Location)

Analytical Parameter	✓ If Field Filtered	Preservation Method	Volume Required	✓ If Sample Collected	Sample Bottle IDs
VOA		HCL	2 0x40ml	✓	17 / G / 022 / 01
SVOA		4oC			/ / /
Pest/PCB		4oC			/ / /
Inorganics		HNO_3			/ / /
Explosives		4°C			/ / /
TPH		H_2SO_4			/ / /
TOC		H_2SO_4			/ / /
Nitrate		H_2SO_4			/ / /

Notes: ___

GROUNDWATER SAMPLE FIELD DATA

Project: NTC ORLANDO
Point of Interest: SA17
Project Number: 02530.05
Date: 6/18/98
Sample Location ID: OLD-17-23A/17G0230I
Time: Start: 1015 End: 1105
Signature of Sampler: [signature]

Water Level/Well Data

Well Depth 115 Ft. ✓ Measured ___ Historical
___ Top of Well ✓ Top of Protective Casing
Well Riser Stick-up ___ Ft. (from ground)
Protective ___ Ft. Casing/Well Difference
Protective ___ Ft. Casing

Depth to Water 23 Ft.
Well Material: ___ PVC ___ SS
Well Locked?: ___ Yes ___ No
Well Dia. ✓ 2 inch ___ 4 inch ___ 6 inch
Water Level Equip. Used: ___ Elect. Cond. Probe ___ Float Activated ___ Press. Transducer

Height of Water Column 8 Ft. X ✓ .16 Gal/Ft. (2 in.) ___ .65 Gal/Ft. (4 in.) ___ 1.5 Gal/Ft. (6 in.) ___ Gal/Ft. (__ in.) = [1.6 Gal/Vol; 13 Total Gal Purged]

Well Integrity: Yes No
Prot. Casing Secure ___ ___
Concrete Collar Intact ___ ___
Other ___ ___ ___

Equipment Documentation

Purging/Sampling Equipment Used:

(✓ If Used For)

Purging	Sampling		Equipment ID
	✓	Peristaltic Pump	
		Submersible Pump	
		Bailer	
		PVC/Silicon Tubing	
	✓	Teflon/Silicon Tubing	
		Airlift	
		Hand Pump	
		In-line Filter	
		Press/Vac Filter	

Decontamination Fluids Used:

(✓ All That Apply at Location)
___ Methanol (100%)
___ 25% Methanol/75% ASTM Type II water
✓ Deionized Water
✓ Liquinox Solution
___ Hexane
___ HNO_3/D.I. Water Solution
___ Potable Water
___ None

Field Analysis Data

Ambient Air VOC ___ ppm Well Mouth ___ ppm Field Data Collected ___ In-line ___ In Container

Sample Observations: ___ Turbid ___ Clear ___ Cloudy ___ Colored ___ Odor

Purge Data	@ 5 Gal.	@ 7 Gal.	@ 9 Gal.	@ 11 Gal.	@ 13 Gal.
Temperature, Deg. C	27.6	26.6	26.8	26.4	26.5
pH, units	5.46	8.06	7.05	7.21	7.30
Specific Conductivity (umhos/cm. @ 25 Deg. C.)	329	340	315	315	318
Oxidation - Reduction, +/- mv					
~~Dissolved Oxygen, ppm~~ Turbidity	6.90	13.95	3.30	3.05	2.09

Sample Collection Requirements

(✓ If Required at this Location)

Analytical Parameter	✓ If Field Filtered	Preservation Method	Volume Required	✓ If Sample Collected	Sample Bottle IDs
VOA		HCL	3x40ml	✓	17 / G / 023 / 01
SVOA		4OC	3x40ml	✓	17 / G / 023 / 01D
Pest/PCB		4OC			/ / /
Inorganics		HNO_3			/ / /
Explosives		4°C			/ / /
TPH		H_2SO_4			/ / /
TOC		H_2SO_4			/ / /
Nitrate		H_2SO_4			/ / /

Notes:

GROUNDWATER SAMPLE FIELD DATA

Project: NTC ORLANDO
Project Number: 02530.05
Sample Location ID: OLD-17-24 B/176G02401
Time: Start: 1205 End: 1300
Point of Interest: SA17
Date: 6/18/98
Signature of Sampler: [signature]

Water Level/Well Data

Well Depth 24.5 Ft. ✓ Measured ___ Historical
___ Top of Well ✓ Top of Protective Casing
Well Riser Stick-up ___ Ft. (from ground)
Protective ___ Ft. Casing/Well Difference
Protective ___ Ft. Casing

Depth to Water 4 Ft.
Well Material: ___ PVC ___ SS
Well Locked?: ✓ Yes ___ No
Well Dia. ✓ 2 inch ___ 4 inch ___ 6 inch
Water Level Equip. Used: ✓ Elect. Cond. Probe ___ Float Activated ___ Press. Transducer

Height of Water Column 20 Ft. X ✓ .16 Gal/Ft. (2 in.) ___ .65 Gal/Ft. (4 in.) ___ 1.5 Gal/Ft. (6 in.) ___ Gal/Ft. (__ in.) = [3.2 Gal/Vol; 16 Total Gal Purged]

Well Integrity:	Yes	No
Prot. Casing Secure	✓	
Concrete Collar Intact	✓	
Other ___		

Equipment Documentation

Purging/Sampling Equipment Used:

Purging	Sampling	(✓ If Used For)	Equipment ID
	✓	Peristaltic Pump	
		Submersible Pump	
		Bailer	
		PVC/Silicon Tubing	
	✓	Teflon/Silicon Tubing	
		Airlift	
		Hand Pump	
		In-line Filter	
		Press/Vac Filter	

Decontamination Fluids Used:

(✓ All That Apply at Location)
___ Methanol (100%)
___ 25% Methanol/75% ASTM Type II water
✓ Deionized Water
✓ Liquinox Solution
___ Hexane
___ HNO_3/D.I. Water Solution
___ Potable Water
___ None

Field Analysis Data

Ambient Air VOC ___ ppm Well Mouth ___ ppm Field Data Collected ___ In-line ___ In Container
Sample Observations: ___ Turbid ___ Clear ___ Cloudy ___ Colored ___ Odor

Purge Data	@ 5 Gal.	@ 10 Gal.	@ 12 Gal.	@ 14 Gal.	@ 16 Gal.
Temperature, Deg. C	27.6	26.0	25.9	26.3	26.6
pH, units	7.70	7.60	7.44	7.21	7.17
Specific Conductivity (umhos/cm. @ 25 Deg. C.)	240	180	185	182	181
Oxidation - Reduction, +/- mv					
~~Dissolved Oxygen, ppm~~ Turbidity	84.3	112.9	80.3	29.7	68.3

Sample Collection Requirements
(✓ If Required at this Location)

Analytical Parameter	✓ If Field Filtered	Preservation Method	Volume Required	✓ If Sample Collected	Sample Bottle IDs
VOA		HCl	3X40ml	✓	17 / 6 / 024 / 01
SVOA		4OC			/ / /
Pest/PCB		4OC			/ / /
Inorganics		HNO_3			/ / /
Explosives		4°C			/ / /
TPH		H_2SO_4			/ / /
TOC		H_2SO_4			/ / /
Nitrate		H_2SO_4			/ / /

Notes: ___

GROUNDWATER SAMPLE FIELD DATA

Project: NTC ORLANDO
Project Number: 02530.05
Sample Location ID: OLD-17-25 C/17G02501
Time: Start: 1045 End: 1740

Point of Interest: SA17
Date: 6/18/98
Signature of Sampler: Mark Tolan

Water Level/Well Data

Well Depth 64 Ft. __ Measured __ Historical __ Top of Well ✓ Top of Protective Casing __ ____

Well Riser Stick-up ____ Ft. (from ground)

Protective ____ Ft. Casing/Well Difference

Protective ____ Ft. Casing

Depth to Water 32 Ft.

Well Material: ✓ PVC __ SS ____

Well Locked?: ✓ Yes __ No

Well Dia. ✓ 2 inch __ 4 inch __ 6 inch __ ____

Water Level Equip. Used: __ Elect. Cond. Probe __ Float Activated __ Press. Transducer __ ____

Height of Water Column 32 Ft. X ✓ .16 Gal/Ft. (2 in.) __ .65 Gal/Ft. (4 in.) __ 1.5 Gal/Ft. (6 in.) __ __ Gal/Ft. (__ in.) = 6.0 Gal/Vol; 10 Total Gal Purged

Well Integrity:

	Yes	No
Prot. Casing Secure	✓	
Concrete Collar Intact	✓	
Other ____		

Equipment Documentation

Purging/Sampling Equipment Used:

(✓ If Used For)

Purging	Sampling		Equipment ID
	✓	Peristaltic Pump	
		Submersible Pump	
		Bailer	
	✓	PVC/Silicon Tubing	
		Teflon/Silicon Tubing	
		Airlift	
		Hand Pump	
		In-line Filter	
		Press/Vac Filter	

Decontamination Fluids Used:

(✓ All That Apply at Location)

__ Methanol (100%)
__ 25% Methanol/75% ASTM Type II water
✓ Deionized Water
✓ Liquinox Solution
__ Hexane
__ HNO_3/D.I. Water Solution
__ Potable Water
__ None
__ ____
__ ____

Field Analysis Data

Ambient Air VOC ____ ppm Well Mouth ____ ppm Field Data Collected __ In-line __ In Container

Sample Observations: ✓ Turbid __ Clear __ Cloudy __ Colored __ Odor

Purge Data	@ 2 Gal.	@ 4 Gal.	@ 6 Gal.	@ 8 Gal.	@ 10 Gal.
Temperature, Deg. C	27.6	28.1	29.2	28.8	28.7
pH, units	7.84	7.77	7.73	7.80	7.79
Specific Conductivity (umhos/cm. @ 25 Deg. C.)	720	600	610	500	480
Oxidation - Reduction, +/- mv					
~~Dissolved Oxygen, ppm~~ Turbidity	>200	>200	>200	>200	>200

Sample Collection Requirements

(✓ If Required at this Location)

Analytical Parameter	✓ If Field Filtered	Preservation Method	Volume Required	✓ If Sample Collected	Sample Bottle IDs
VOA		HCL	3x40ml	✓	17 / G / 025 / 01
SVOA		4oC			/ / /
Pest/PCB		4oC			/ / /
Inorganics		HNO_3			/ / /
Explosives		4°C			/ / /
TPH		H_2SO_4			/ / /
TOC		H_2SO_4			/ / /
Nitrate		H_2SO_4			/ / /

Notes: ____

GROUNDWATER SAMPLE FIELD DATA

Project: NTC ORLANDO
Project Number: 02570-05
Sample Location ID: OLD-17-26A/17L02601
Time: Start: 1020 End: 1050

Point of Interest: SA17
Date: 6/17/98
Signature of Sampler: Mark Tolan

Water Level/Well Data

Well Depth 12 Ft. ✓ Measured ___ Historical

✓ Top of Well ___ Top of Protective Casing

Well Riser Stick-up ___ Ft. (from ground)

Protective Casing/Well Difference ___ Ft.

Protective Casing ___ Ft.

Depth to Water 2.23 Ft.

Well Material: ✓ PVC ___ SS

Well Locked?: ✓ Yes ___ No

Well Dia. ✓ 2 inch ___ 4 inch ___ 6 inch

Water Level Equip. Used: ✓ Elect. Cond. Probe ___ Float Activated ___ Press. Transducer

Height of Water Column 10 Ft. X ___ .16 Gal/Ft. (2 in.) ___ .65 Gal/Ft. (4 in.) ___ 1.5 Gal/Ft. (6 in.) ___ Gal/Ft. (__ in.) = 1.6 Gal/Vol; 11 Total Gal Purged

Well Integrity:	Yes	No
Prot. Casing Secure	✓	
Concrete Collar Intact	✓	
Other ___		

Equipment Documentation

Purging/Sampling Equipment Used:

(✓ If Used For)

Purging	Sampling		Equipment ID
	✓	Peristaltic Pump	
		Submersible Pump	
		Bailer	
		PVC/Silicon Tubing	
	✓	Teflon/Silicon Tubing	
		Airlift	
		Hand Pump	
		In-line Filter	
		Press/Vac Filter	

Decontamination Fluids Used:

(✓ All That Apply at Location)

___ Methanol (100%)
___ 25% Methanol/75% ASTM Type II water
✓ Deionized Water
✓ Liquinox Solution
___ Hexane
___ HNO_3/D.I. Water Solution
___ Potable Water
___ None

Field Analysis Data

Ambient Air VOC ___ ppm Well Mouth ___ ppm Field Data Collected ___ In-line ___ In Container

Sample Observations: ___ Turbid ___ Clear ___ Cloudy ___ Colored ___ Odor

Purge Data	@ 5 Gal.	@ 7 Gal.	@ 9 Gal.	@ 11 Gal.	@ ___ Gal.
Temperature, Deg. C	28.8	27.3	27.0	27.1	
pH, units	6.55	6.73	6.83	6.92	
Specific Conductivity (umhos/cm. @ 25 Deg. C.)	420	390	400	390	
Oxidation - Reduction, +/- mv					
~~Dissolved Oxygen, ppm~~ Turbidity	15.8	2.60	2.04	2.07	

Sample Collection Requirements

(✓ If Required at this Location)

Analytical Parameter	✓ If Field Filtered	Preservation Method	Volume Required	✓ If Sample Collected	Sample Bottle IDs
VOA		HCL	3x40ml	✓	17 / G / 026 / 01
SVOA		4OC			/ / /
Pest/PCB		4OC			/ / /
Inorganics		HNO_3			/ / /
Explosives		4°C			/ / /
TPH		H_2SO_4			/ / /
TOC		H_2SO_4			/ / /
Nitrate		H_2SO_4			/ / /

Notes:

GROUNDWATER SAMPLE FIELD DATA

Project: NTC ORLANDO
Point of Interest: SA17
Project Number: 02570.05
Date: 6/17/98
Sample Location ID: OLD-17-27B/17G02701
Time: Start: 1155 End: 1245
Signature of Sampler: Mark Tislaw

Water Level/Well Data

Well Depth 20 ft. ✓ Measured __ Historical
__ Top of Well ✓ Top of Protective Casing
Well Riser Stick-up ____ ft. (from ground)
Protective ____ ft. Casing/Well Difference
Protective ____ ft. Casing

Depth to Water 2.5 ft.
Well Material: __ PVC __ SS
Well Locked?: ✓ Yes __ No
Well Dia. ✓ 2 inch __ 4 inch __ 6 inch
Water Level Equip. Used: ✓ Elect. Cond. Probe __ Float Activated __ Press. Transducer

Height of Water Column 17.5 ft. X ✓ .16 Gal/ft. (2 in.) __ .65 Gal/ft. (4 in.) __ 1.5 Gal/ft. (6 in.) __ Gal/ft. (__ in.) = 3.1 Gal/Vol; 16 Total Gal Purged

Well Integrity:	Yes	No
Prot. Casing Secure		
Concrete Collar Intact		
Other ____		

Equipment Documentation

Purging/Sampling Equipment Used:

(✓ If Used For)

Purging	Sampling		Equipment ID
		Peristaltic Pump	
		Submersible Pump	
		Bailer	
		PVC/Silicon Tubing	
	✓	Teflon/Silicon Tubing	
		Airlift	
		Hand Pump	
		In-line Filter	
		Press/Vac Filter	

Decontamination Fluids Used:

(✓ All That Apply at Location)
- __ Methanol (100%)
- __ 25% Methanol/75% ASTM Type II water
- ✓ Deionized Water
- ✓ Liquinox Solution
- __ Hexane
- __ HNO_3/D.I. Water Solution
- __ Potable Water
- __ None

Field Analysis Data

Ambient Air VOC ____ ppm Well Mouth ____ ppm Field Data Collected __ In-line __ In Container
Sample Observations: __ Turbid __ Colored __ Clear __ Odor __ Cloudy

Purge Data	@ 5 Gal.	@ 10 Gal.	@ 12 Gal.	@ 14 Gal.	@ 16 Gal.
Temperature, Deg. C	26.8	26.2	26.0	25.7	25.0
pH, units	7.16	7.17	6.74	6.74	6.59
Specific Conductivity (umhos/cm. @ 25 Deg. C.)	240	220	220	220	225
Oxidation - Reduction, +/- mv					
~~Dissolved Oxygen, ppm~~ Turbidity	98.2	102.3	>200	>200	>200

Sample Collection Requirements

(✓ If Required at this Location)

Analytical Parameter	✓ If Field Filtered	Preservation Method	Volume Required	✓ If Sample Collected	Sample Bottle IDs
VOA		HCL	3x40ml	✓	17 / 6 / 027 / 01
SVOA		4OC			
Pest/PCB		4OC			
Inorganics		HNO_3			
Explosives		4°C			
TPH		H_2SO_4			
TOC		H_2SO_4			
Nitrate		H_2SO_4			

Notes:

GROUNDWATER SAMPLE FIELD DATA

Project: NTC ORLANDO
Point of Interest: SA17
Project Number: 02530.05
Date: 6/17/98
Sample Location ID: OLD-17-28 / 17G028 01
Time: Start: 1100 End: 1300
Signature of Sampler: Mark Todd

Water Level/Well Data

Well Depth 63 Ft. ✓ Measured ___ Historical
___ Top of Well ✓ Top of Protective Casing
Well Riser Stick-up ___ Ft. (from ground)
Protective ___ Ft. Casing/Well Difference
Protective ___ Ft. Casing

Depth to Water 31 Ft.
Well Material: ___ PVC ___ SS
Well Locked?: ___ Yes ___ No
Well Dia. ___ 2 inch ___ 4 inch ___ 6 inch
Water Level Equip. Used: ___ Elect. Cond. Probe ___ Float Activated ___ Press. Transducer

Height of Water Column 32 Ft. X ✓ .16 Gal/Ft. (2 in.) ___ .65 Gal/Ft. (4 in.) ___ 1.5 Gal/Ft. (6 in.) ___ Gal/Ft. (__ in.) = 6 Gal/Vol; 10 Total Gal Purged

Well Integrity:	Yes	No
Prot. Casing Secure	___	___
Concrete Collar Intact	___	___
Other ___	___	___

Equipment Documentation

Purging/Sampling Equipment Used:

(✓ If Used For)

Purging	Sampling		Equipment ID
___	✓	Peristaltic Pump	___
___	___	Submersible Pump	___
___	___	Bailer	___
___	___	PVC/Silicon Tubing	___
___	✓	Teflon/Silicon Tubing	___
___	___	Airlift	___
___	___	Hand Pump	___
___	___	In-line Filter	___
___	___	Press/Vac Filter	___

Decontamination Fluids Used:

(✓ All That Apply at Location)
___ Methanol (100%)
___ 25% Methanol/75% ASTM Type II water
✓ Deionized Water
✓ Liquinox Solution
___ Hexane
___ HNO_3/D.I. Water Solution
___ Potable Water
___ None

Field Analysis Data

Ambient Air VOC ___ ppm Well Mouth ___ ppm Field Data Collected ___ In-line ___ In Container
Sample Observations: ___ Turbid ___ Colored ___ Clear ___ Odor ___ Cloudy

Purge Data	@ 2 Gal.	@ 4 Gal.	@ 6 Gal.	@ 8 Gal.	@ 10 Gal.
Temperature, Deg. C	29.8	29.9	29.9	29.4	29.8
pH, units	6.92	7.28	6.79	7.12	6.32
Specific Conductivity (umhos/cm. @ 25 Deg. C.)	480	420	410	380	372
Oxidation - Reduction, +/- mv					
~~Dissolved Oxygen, ppm~~ Turbidity	>200	>200	>200	>200	>200

Sample Collection Requirements
(✓ If Required at this Location)

Analytical Parameter	✓ If Field Filtered	Preservation Method	Volume Required	✓ If Sample Collected	Sample Bottle IDs
VOA	___	HCl	3 x 40ml	✓	17 / G / 028 / 01
SVOA	___	4°C	___	___	___ / ___ / ___ / ___
Pest/PCB	___	4°C	___	___	___ / ___ / ___ / ___
Inorganics	___	HNO_3	___	___	___ / ___ / ___ / ___
Explosives	___	4°C	___	___	___ / ___ / ___ / ___
TPH	___	H_2SO_4	___	___	___ / ___ / ___ / ___
TOC	___	H_2SO_4	___	___	___ / ___ / ___ / ___
Nitrate	___	H_2SO_4	___	___	___ / ___ / ___ / ___

Notes: ___

APPENDIX B

SUMMARY OF DETECTIONS TABLES
(CONTRACT LABORATORY PROGRAM LABORATORY)

TABLE B-1

SUMMARY OF POSITIVE DETECTIONS IN SURFACE SOIL ANALYTICAL RESULTS

Appendix B

Table B-1. Summary of Positive Detections in Surface Soil Analytical Results, Study Area 17

Naval Training Center, Orlando
Orlando, FL

Identifier	Background	SCTL for Residential Soil	RBC for Residential Soil		RBC for Industrial Soil		17B00801		17B01801		17B01901		17B02301		17B02301D		17B02401	
Sampling Date							4/26/95		4/25/95		4/26/95		5/26/95		5/26/95		5/26/95	
Feet bls							1		1		0.5-1.5		1		1		1	
Volatile Organics, µg/kg																		
Acetone		770,000	7,800,000	n	200,000,000	n							7	J				
Xylene (total)		290,000	16,000,000	n	1,000,000,000	n					53							
Semivolatile Organics, µg/kg																		
1-Methylnaphthalene		290,000	ND		ND		NA		NA		NA		NA		NA		NA	
2-Methylnaphthalene		1,500,000	3,100,000	n	82,000,000	n					110	J						
Acenaphthene		2,300,000	4,700,000	n	120,000,000	n							150	J				
Acenaphthylene		1,100,000	ND		ND		NA		NA		NA		NA		NA		NA	
Anthracene		19,000,000	23,000,000	n	610,000,000	n												
Benzo(a)anthracene		1,400	880	c	7,800	c							240	J				
Benzo(a)pyrene		100	88	c	780	c												
Benzo(b)fluoranthene		1,400	880	c	7,800	c							180	J				
Benzo(g,h,i)perylene		2,300,000	2,300,000		61,000,000													
Benzo(k)fluoranthene		15,000	8,800	c	78,000	c							140	J				
Butylbenzylphthalate		15,000,000	16,000,000	n	410,000,000	n												
Carbazole		53,000	32,000	c	290,000	c												
Chrysene		140,000	88,000	c	780,000	c							210	J				
Dibenz(a,h)anthracene		100	88	c	780	c												
Dibenzofuran		270,000	310,000	n	82,000,000	n												
Fluoranthene		2,800,000	3,100,000	n	82,000,000	n	130	J	170	J			580					
Fluorene		2,100,000	3,100,000	n	82,000,000	n												
Indeno(1,2,3-cd)pyrene		1,500	880	c	7,800	c												
Naphthalene		1,000,000	3,100,000	n	82,000,000	n								NA				
Phenanthrene		1,900,000	2,300,000	n	61,000,000	n			110	J			290	J				
Pyrene		2,200,000	2,300,000	n	61,000,000	n	140	J	110	J			120	J				
Pesticides, µg/kg																		
4,4'-DDD		4,500	2,700	c	24,000	c												
4,4'-DDE		3,200	1,900	c	17,000	c					5		9	J	8	J	7	J
4,4'-DDT		3,200	1,900	c	17,000	c											12	J
alpha-Chlordane		3,000	490	c	4,400	c							110	DJ	95	D	7	
Dieldrin		70	40	c	360	c							17		18		2	J

Appendix B

Table B-1. Summary of Positive Detections in Surface Soil Analytical Results, Study Area 17

Naval Training Center, Orlando
Orlando, FL

Identifier	Background	SCTL for Residential Soil	RBC for Residential Soil	RBC for Industrial Soil	17B00801	17B01801	17B01901	17B02301	17B02301D	17B02401
Sampling Date					4/26/95	4/25/95	4/26/95	5/26/95	5/26/95	5/26/95
Feet bls					1	1	0.5-1.5	1	1	1
Endrin ketone		ND	23,000 n	610,000 n						
gamma-Chlordane		3,000	490 c	4,400 c				120 DJ	100 D	5.8 J
Heptachlor		10	140 c	1,300 c				7.8	8.9	
Inorganics, mg/kg										
Aluminum	4,890	72,000	78,000 n	1,000,000 n	1,080	5,400 J	538	2,280	2,460	1,040
Arsenic	1.9	0.8	0.43 /23 c/n	3.8 /610 c/n		0.7 BJ		[illegible] J	0.73 B	1.4 B
Barium	21.6	105	5,500 n	140,000 n	2.3 B	6.6 BJ	0.57 B	6.6 B	7.3 B	7.5 B
Beryllium	0.46	120.0	0.15 c	1.3 c		0.08 B		0.02 B	0.02 B	0.1 B
Cadmium	ND	75	39 n	1,000 n						1.3
Calcium	33,568	ND	1,000,000	1,000,000	745 J	3,200 J	226 J	21,400	19,600	235,000
Chromium	7.7	290	390 n	10,000 n	1.6 B	5.2 J	0.79 B	5.1	6.2	7.7
Cobalt	ND	4,700	4,700,000 n	120,000,000 n						0.93 B
Copper	2.6	105	3,100 n	82,000 n	0.7 B		0.46 B	6.1	5 B	9
Iron	843	23,000	23,000 n	610,000 n	155 J	312 J	800 J	497	477	632
Lead	21.3	500	400	400	2.1	6.6	0.8	23.6 J	25.4 J	39.7 J
Magnesium	381	ND	460,468	460,468	19.5 B	66.6 J	11.7 B	190 B	179 B	1700
Manganese	10.8	1,600	1,800 n	47,000 n	1.7 B	2.4 J	0.6 B	7.4	8.4	18.8
Mercury	0.05	3.7	23 n	610 n	0.0 B	0.1		0.03 B	0.03 B	0.07
Silver	ND	390	390 n	10,000 n		57.5				
Sodium	ND	ND	1,000,000	1,000,000				9.8 B	10.2 B	75 B
Thallium	ND	ND	6.3 n	160 n			0.7 B			
Vanadium	4.9	15	550 n	14,000 n	0.9 B	2.1 B	1.2 B	3.7 B	3.4 B	15.4
Zinc	4.6	23,000	23,000 n	610,000 n	11.4	4.0 J	1.7 B	11.1	15.4	20.1
General chemistry, mg/kg										
Total Petroleum Hydrocarbons	ND	ND	ND	ND	6	23		110	95	28

Appendix B

Table B-1. Summary of Positive Detections in Surface Soil Analytical Results, Study Area 17

Naval Training Center, Orlando
Orlando, FL

Identifier	Background	SCTL for Residential Soil	RBC for Residential Soil		RBC for Industrial Soil		17B02501		17B03401		17B03501		17B03601		17B05001		17B05301	
Sampling Date							5/26/95		5/26/95		5/26/95		5/26/95		11/21/97		11/24/97	
Feet bls							1		1		1		1		1-2		1-2	
Volatile Organics, µg/kg																		
Acetone		770,000	7,800,000	n	200,000,000	n	9	J			13	J	8	J	NA		NA	
Xylene (total)		290,000	16,000,000	n	1,000,000,000	n									NA		NA	
Semivolatile Organics, µg/kg																		
1-Methylnaphthalene		290,000	ND		ND		NA		NA		NA		NA		NA		NA	
2-Methylnaphthalene		1,500,000	3,100,000	n	82,000,000	n					140	J						
Acenaphthene		2,300,000	4,700,000	n	120,000,000	n					1,500				42			
Acenaphthylene		1,100,000	ND		ND		NA		NA		NA		NA		NA		NA	
Anthracene		19,000,000	23,000,000	n	610,000,000	n					2,600		90	J				
Benzo(a)anthracene		1,400	880	c	7,800	c					9,000	D	340	J	27		12	
Benzo(a)pyrene		100	88	c	780	c					8,100	D	300	J	26		23	
Benzo(b)fluoranthene		1,400	880	c	7,800	c					7,200	D	320	J	54		42	
Benzo(g,h,i)perylene		2,300,000	2,300,000		61,000,000						6,400	D	220	J	56		44	
Benzo(k)fluoranthene		15,000	8,800	c	78,000	c					2,400		250	J	13	PF	18	
Butylbenzylphthalate		15,000,000	16,000,000	n	410,000,000	n							460		NA		NA	
Carbazole		53,000	32,000	c	290,000	c					1,700							
Chrysene		140,000	88,000	c	780,000	c					9,300	D	380		42		22	
Dibenz(a,h)anthracene		100	88	c	780	c					2,500		98	J			10	PF
Dibenzofuran		270,000	310,000	n	82,000,000	n					630							
Fluoranthene		2,800,000	3,100,000	n	82,000,000	n					13,000	D	710		64		22	
Fluorene		2,100,000	3,100,000	n	82,000,000	n					1,400							
Indeno(1,2,3-cd)pyrene		1,500	880	c	7,800	c					6,900	D	170	J			20	PF
Naphthalene		1,000,000	3,100,000	n	82,000,000	n					210	J			39			
Phenanthrene		1,900,000	2,300,000	n	61,000,000	n					11,000	D	440					
Pyrene		2,200,000	2,300,000	n	61,000,000	n					16,000	D	640		74		24	
Pesticides, µg/kg																		
4,4'-DDD		4,500	2,700	c	24,000	c					2,600	C	8		NA		NA	
4,4'-DDE		3,200	1,900	c	17,000	c					430		6	J	NA		NA	
4,4'-DDT		3,200	1,900	c	17,000	c					1,700	C	13		NA		NA	
alpha-Chlordane		3,000	490	c	4,400	c					260		4	J	NA		NA	
Dieldrin		70	40	c	360	c							5	J	NA		NA	

Appendix B

Table B-1. Summary of Positive Detections in Surface Soil Analytical Results, Study Area 17

Naval Training Center, Orlando
Orlando, FL

Identifier	Background	SCTL for Residential Soil	RBC for Residential Soil		RBC for Industrial Soil		17B02501		17B03401		17B03501		17B03601		17B05001		17B05301	
Sampling Date							5/26/95		5/26/95		5/26/95		5/26/95		11/21/97		11/24/97	
Feet bls							1		1		1		1		1-2		1-2	
Endrin ketone		ND	23,000	n	610,000	n									NA		NA	
gamma-Chlordane		3,000	490	c	4,400	c					320		5		NA		NA	
Heptachlor		10	140	c	1,300	c									NA		NA	
Inorganics, mg/kg																		
Aluminum	4,890	72,000	78,000	n	1,000,000	n	1,550	J	1,200	J	1,580	J	1,980	J	NA		NA	
Arsenic	1.9	0.8	0.43 /23	c/n	3.8 /610	c/			0.53	B	0.68	B	0.46	B	NA		NA	
Barium	21.6	105	5,500	n	140,000	n	3.3	B	5.2	B	16.3	B	6.1	B	NA		NA	
Beryllium	0.46	120.0	0.15	c	1.3	c					0.15	B			NA		NA	
Cadmium	ND	75	39	n	1,000	n									NA		NA	
Calcium	33,568	ND	1,000,000		1,000,000		629	B	3,910		88,200		5,270		NA		NA	
Chromium	7.7	290	390	n	10,000	n	1.8	B	1.6	B	22.7		2.8		NA		NA	
Cobalt	ND	4,700	4,700,000	n	120,000,000	n									NA		NA	
Copper	2.6	105	3,100	n	82,000	n					7.9		.		NA		NA	
Iron	843	23,000	23,000	n	610,000	n	236	J	332	J	10,400	J	563	J	NA		NA	
Lead	21.3	500	400		400		0.9	J	3.6	J	50.2	J	16.5	J	NA		NA	
Magnesium	381	ND	460,468		460,468		51.4	B	96.6	B	1,020	B	80.6	B	NA		NA	
Manganese	10.8	1,600	1,800	n	47,000	n	1.1	B	5.5		47.7		2.6	B	NA		NA	
Mercury	0.05	3.7	23	n	610	n					0.08		0.03	B	NA		NA	
Silver	ND	390	390	n	10,000	n									NA		NA	
Sodium	ND	ND	1,000,000		1,000,000						47.7	B			NA		NA	
Thallium	ND	ND	6.3	n	160	n									NA		NA	
Vanadium	4.9	15	550	n	14,000	n	2.5	B	3.1	B	8.4	B	4.8	B	NA		NA	
Zinc	4.6	23,000	23,000	n	610,000	n	0.89	B	2.7	B	32.7		6.2		NA		NA	
General chemistry, mg/kg																		
Total Petroleum Hydrocarbons	ND	ND	ND		ND		29		58		99		9		NA		NA	

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Table B-1. Summary of Positive Detections in Surface Soil Analytical Results, Study Area 17

Naval Training Center, Orlando
Orlando, FL

Identifier	Background	SCTL for Residential Soil	RBC for Residential Soil		RBC for Industrial Soil		17B05401		17S04801		17S04901		17S05001		17S05001D		17S05101	
Sampling Date							11/24/97		11/21/97		11/21/97		11/21/97		11/21/97		11/21/97	
Feet bls							1-2		0-1		0-1		0-1		0-1		0-1	
Volatile Organics, µg/kg																		
Acetone		770,000	7,800,000	n	200,000,000	n	NA		NA		NA		NA		NA		NA	
Xylene (total)		290,000	16,000,000	n	1,000,000,000	n	NA		NA		NA		NA		NA		NA	
Semivolatile Organics, µg/kg																		
1-Methylnaphthalene		290,000	ND		ND		NA		NA		NA		NA		NA		NA	
2-Methylnaphthalene		1,500,000	3,100,000	n	82,000,000	n												
Acenaphthene		2,300,000	4,700,000	n	120,000,000	n					38				3,000		190,000	
Acenaphthylene		1,100,000	ND		ND		NA		NA		NA		NA		NA		NA	
Anthracene		19,000,000	23,000,000	n	610,000,000	n												
Benzo(a)anthracene		1,400	880	c	7,800	c	32				4	PF	1,700		980		57,000	
Benzo(a)pyrene		100	88	c	780	c	29				8		1,700		1,100		48,000	
Benzo(b)fluoranthene		1,400	880	c	7,800	c	34				10		1,700		1,200		47,000	
Benzo(g,h,i)perylene		2,300,000	2,300,000		61,000,000		43				11		1,000		1,000		24,000	
Benzo(k)fluoranthene		15,000	8,800	c	78,000	c	15				5		820		510		21,000	
Butylbenzylphthalate		15,000,000	16,000,000	n	410,000,000	n	NA		NA		NA		NA		NA		NA	
Carbazole		53,000	32,000	c	290,000	c												
Chrysene		140,000	88,000	c	780,000	c	29				12		1,600		930		50,000	
Dibenz(a,h)anthracene		100	88	c	780	c							270	PF			7,900	PF
Dibenzofuran		270,000	310,000	n	82,000,000	n												
Fluoranthene		2,800,000	3,100,000	n	82,000,000	n	35				17		3,700		2,100		160,000	
Fluorene		2,100,000	3,100,000	n	82,000,000	n												
Indeno(1,2,3-cd)pyrene		1,500	880	c	7,800	c							280	PF				
Naphthalene		1,000,000	3,100,000	n	82,000,000	n												
Phenanthrene		1,900,000	2,300,000	n	61,000,000	n							3,300	PF			120,000	
Pyrene		2,200,000	2,300,000	n	61,000,000	n	52		56		23		3,900		1,800		100,000	
Pesticides, µg/kg																		
4,4'-DDD		4,500	2,700	c	24,000	c	NA		NA		NA		NA		NA		NA	
4,4'-DDE		3,200	1,900	c	17,000	c	NA		NA		NA		NA		NA		NA	
4,4'-DDT		3,200	1,900	c	17,000	c	NA		NA		NA		NA		NA		NA	
alpha-Chlordane		3,000	490	c	4,400	c	NA		NA		NA		NA		NA		NA	
Dieldrin		70	40	c	360	c	NA		NA		NA		NA		NA		NA	

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Table B-1. Summary of Positive Detections in Surface Soil Analytical Results, Study Area 17

Naval Training Center, Orlando
Orlando, FL

Identifier	Background	SCTL for Residential Soil	RBC for Residential Soil		RBC for Industrial Soil		17B05401	17S04801	17S04901	17S05001	17S05001D	17S05101
Sampling Date							11/24/97	11/21/97	11/21/97	11/21/97	11/21/97	11/21/97
Feet bls							1-2	0-1	0-1	0-1	0-1	0-1
Endrin ketone		ND	23,000	n	610,000	n	NA	NA	NA	NA	NA	NA
gamma-Chlordane		3,000	490	c	4,400	c	NA	NA	NA	NA	NA	NA
Heptachlor		10	140	c	1,300	c	NA	NA	NA	NA	NA	NA
Inorganics, mg/kg												
Aluminum	4,890	72,000	78,000	n	1,000,000	n	NA	NA	NA	NA	NA	NA
Arsenic	1.9	0.8	0.43 /23	c/n	3.8 /610	c/	NA	NA	NA	NA	NA	NA
Barium	21.6	105	5,500	n	140,000	n	NA	NA	NA	NA	NA	NA
Beryllium	0.46	120.0	0.15	c	1.3	c	NA	NA	NA	NA	NA	NA
Cadmium	ND	75	39	n	1,000	n	NA	NA	NA	NA	NA	NA
Calcium	33,568	ND	1,000,000		1,000,000		NA	NA	NA	NA	NA	NA
Chromium	7.7	290	390	n	10,000	n	NA	NA	NA	NA	NA	NA
Cobalt	ND	4,700	4,700,000	n	120,000,000	n	NA	NA	NA	NA	NA	NA
Copper	2.6	105	3,100	n	82,000	n	NA	NA	NA	NA	NA	NA
Iron	843	23,000	23,000	n	610,000	n	NA	NA	NA	NA	NA	NA
Lead	21.3	500	400		400		NA	NA	NA	NA	NA	NA
Magnesium	381	ND	460,468		460,468		NA	NA	NA	NA	NA	NA
Manganese	10.8	1,600	1,800	n	47,000	n	NA	NA	NA	NA	NA	NA
Mercury	0.05	3.7	23	n	610	n	NA	NA	NA	NA	NA	NA
Silver	ND	390	390	n	10,000	n	NA	NA	NA	NA	NA	NA
Sodium	ND	ND	1,000,000		1,000,000		NA	NA	NA	NA	NA	NA
Thallium	ND	ND	6.3	n	160	n	NA	NA	NA	NA	NA	NA
Vanadium	4.9	15	550	n	14,000	n	NA	NA	NA	NA	NA	NA
Zinc	4.6	23,000	23,000	n	610,000	n	NA	NA	NA	NA	NA	NA
General chemistry, mg/kg												
Total Petroleum Hydrocarbons	ND	ND	ND		ND		NA	NA	NA	NA	NA	NA

Appendix B
Table B-1. Summary of Positive Detections in Surface Soil Analytical Results, Study Area 17

Naval Training Center, Orlando
Orlando, FL

Identifier	Background	SCTL for Residential Soil	RBC for Residential Soil		RBC for Industrial Soil		17S05201		17S05301		17S05401		17S05601		17S05701		17S05801	
Sampling Date							11/21/97		11/24/97		11/24/97		11/17/98		11/17/98		11/17/98	
Feet bls							0-1		0-1		0-1		0-1		0-1		0-1	
Volatile Organics, µg/kg																		
Acetone		770,000	7,800,000	n	200,000,000	n	NA		NA		NA		NA		NA		NA	
Xylene (total)		290,000	16,000,000	n	1,000,000,000	n	NA		NA		NA		NA		NA		NA	
Semivolatile Organics, µg/kg																		
1-Methylnaphthalene		290,000	ND		ND		NA		NA		NA							
2-Methylnaphthalene		1,500,000	3,100,000	n	82,000,000	n												
Acenaphthene		2,300,000	4,700,000	n	120,000,000	n	1,200		260		770							
Acenaphthylene		1,100,000	ND		ND		NA		NA		NA							
Anthracene		19,000,000	23,000,000	n	610,000,000	n												
Benzo(a)anthracene		1,400	880	c	7,800	c	410		83		270		330		2,200		14	
Benzo(a)pyrene		100	88	c	780	c	420		120		62	PF	430		2,600		55	
Benzo(b)fluoranthene		1,400	880	c	7,800	c	500		140		270		430		2,200		24	
Benzo(g,h,i)perylene		2,300,000	2,300,000		61,000,000		400		110				330		1,600		36	
Benzo(k)fluoranthene		15,000	8,800	c	78,000	c	240		57		67	PF	220		1,200		17	
Butylbenzylphthalate		15,000,000	16,000,000	n	410,000,000	n	NA		NA		NA		NA		NA		NA	
Carbazole		53,000	32,000	c	290,000	c							NA		NA		NA	
Chrysene		140,000	88,000	c	780,000	c	390		100		250		340		2,100		16	
Dibenz(a,h)anthracene		100	88	c	780	c	54	PF	26	PF	57	PF						
Dibenzofuran		270,000	310,000	n	82,000,000	n							NA		NA		NA	
Fluoranthene		2,800,000	3,100,000	n	82,000,000	n	900		210		530		780		6,000		15	
Fluorene		2,100,000	3,100,000	n	82,000,000	n												
Indeno(1,2,3-cd)pyrene		1,500	880	c	7,800	c	360		58		35	PF	290					
Naphthalene		1,000,000	3,100,000	n	82,000,000	n			98									
Phenanthrene		1,900,000	2,300,000	n	61,000,000	n					390							
Pyrene		2,200,000	2,300,000	n	61,000,000	n	630		160		630		550		4,300		17	
Pesticides, µg/kg																		
4,4'-DDD		4,500	2,700	c	24,000	c	NA		NA		NA		NA		NA		NA	
4,4'-DDE		3,200	1,900	c	17,000	c	NA		NA		NA		NA		NA		NA	
4,4'-DDT		3,200	1,900	c	17,000	c	NA		NA		NA		NA		NA		NA	
alpha-Chlordane		3,000	490	c	4,400	c	NA		NA		NA		NA		NA		NA	
Dieldrin		70	40	c	360	c	NA		NA		NA		NA		NA		NA	

Appendix B

Table B-1. Summary of Positive Detections in Surface Soil Analytical Results, Study Area 17

Naval Training Center, Orlando
Orlando, FL

Identifier	Background	SCTL for Residential Soil	RBC for Residential Soil		RBC for Industrial Soil		17S05201	17S05301	17S05401	17S05601	17S05701	17S05801
Sampling Date							11/21/97	11/24/97	11/24/97	11/17/98	11/17/98	11/17/98
Feet bls							0-1	0-1	0-1	0-1	0-1	0-1
Endrin ketone		ND	23,000	n	610,000	n	NA	NA	NA	NA	NA	NA
gamma-Chlordane		3,000	490	c	4,400	c	NA	NA	NA	NA	NA	NA
Heptachlor		10	140	c	1,300	c	NA	NA	NA	NA	NA	NA
Inorganics, mg/kg												
Aluminum	4,890	72,000	78,000	n	1,000,000	n	NA	NA	NA	NA	NA	NA
Arsenic	1.9	0.8	0.43 /23	c/n	3.8 /610	c/	NA	NA	NA	NA	NA	NA
Barium	21.6	105	5,500	n	140,000	n	NA	NA	NA	NA	NA	NA
Beryllium	0.46	120.0	0.15	c	1.3	c	NA	NA	NA	NA	NA	NA
Cadmium	ND	75	39	n	1,000	n	NA	NA	NA	NA	NA	NA
Calcium	33,568	ND	1,000,000		1,000,000		NA	NA	NA	NA	NA	NA
Chromium	7.7	290	390	n	10,000	n	NA	NA	NA	NA	NA	NA
Cobalt	ND	4,700	4,700,000	n	120,000,000	n	NA	NA	NA	NA	NA	NA
Copper	2.6	105	3,100	n	82,000	n	NA	NA	NA	NA	NA	NA
Iron	843	23,000	23,000	n	610,000	n	NA	NA	NA	NA	NA	NA
Lead	21.3	500	400		400		NA	NA	NA	NA	NA	NA
Magnesium	381	ND	460,468		460,468		NA	NA	NA	NA	NA	NA
Manganese	10.8	1,600	1,800	n	47,000	n	NA	NA	NA	NA	NA	NA
Mercury	0.05	3.7	23	n	610	n	NA	NA	NA	NA	NA	NA
Silver	ND	390	390	n	10,000	n	NA	NA	NA	NA	NA	NA
Sodium	ND	ND	1,000,000		1,000,000		NA	NA	NA	NA	NA	NA
Thallium	ND	ND	6.3	n	160	n	NA	NA	NA	NA	NA	NA
Vanadium	4.9	15	550	n	14,000	n	NA	NA	NA	NA	NA	NA
Zinc	4.6	23,000	23,000	n	610,000	n	NA	NA	NA	NA	NA	NA
General chemistry, mg/kg												
Total Petroleum Hydrocarbons	ND	ND	ND		ND		NA	NA	NA	NA	NA	NA

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Table B-1. Summary of Positive Detections in Surface Soil Analytical Results, Study Area 17

Naval Training Center, Orlando
Orlando, FL

Identifier	Background	SCTL for Residential Soil	RBC for Residential Soil		RBC for Industrial Soil		17S05901	17S06001	17S06101	17S06201	17S06301	17S06401
Sampling Date							11/17/98	11/17/98	11/17/98	11/17/98	11/17/98	11/17/98
Feet bls							0-1	0-1	0-1	0-1	0-1	0-1
Volatile Organics, µg/kg												
Acetone		770,000	7,800,000	n	200,000,000	n	NA	NA	NA	NA	NA	NA
Xylene (total)		290,000	16,000,000	n	1,000,000,000	n	NA	NA	NA	NA	NA	NA
Semivolatile Organics, µg/kg												
1-Methylnaphthalene		290,000	ND		ND							
2-Methylnaphthalene		1,500,000	3,100,000	n	82,000,000	n						
Acenaphthene		2,300,000	4,700,000	n	120,000,000	n						
Acenaphthylene		1,100,000	ND		ND							
Anthracene		19,000,000	23,000,000	n	610,000,000	n						
Benzo(a)anthracene		1,400	880	c	7,800	c	210		10,000	3,000	16,000	5,200
Benzo(a)pyrene		100	88	c	780	c	680	28	14,000	4,000	20,000	6,600
Benzo(b)fluoranthene		1,400	880	c	7,800	c	610	17	12,000	3,700	20,000	7,400
Benzo(g,h,i)perylene		2,300,000	2,300,000		61,000,000		610	15	8,700	2,700	13,000	4,100
Benzo(k)fluoranthene		15,000	8,800	c	78,000	c	300	7	6,100	1,900	9,500	3,400
Butylbenzylphthalate		15,000,000	16,000,000	n	410,000,000	n	NA	NA	NA	NA	NA	NA
Carbazole		53,000	32,000	c	290,000	c	NA	NA	NA	NA	NA	NA
Chrysene		140,000	88,000	c	780,000	c	240	8	11,000	3,100	17,000	6,700
Dibenz(a,h)anthracene		100	88	c	780	c						
Dibenzofuran		270,000	310,000	n	82,000,000	n	NA	NA	NA	NA	NA	NA
Fluoranthene		2,800,000	3,100,000	n	82,000,000	n	230		27,000	7,400	46,000	19,000
Fluorene		2,100,000	3,100,000	n	82,000,000	n						
Indeno(1,2,3-cd)pyrene		1,500	880	c	7,800	c	570		7,700		12,000	4,100
Naphthalene		1,000,000	3,100,000	n	82,000,000	n						
Phenanthrene		1,900,000	2,300,000	n	61,000,000	n						
Pyrene		2,200,000	2,300,000	n	61,000,000	n	370	13	19,000	5,100	29,000	12,000
Pesticides, µg/kg												
4,4'-DDD		4,500	2,700	c	24,000	c	NA	NA	NA	NA	NA	NA
4,4'-DDE		3,200	1,900	c	17,000	c	NA	NA	NA	NA	NA	NA
4,4'-DDT		3,200	1,900	c	17,000	c	NA	NA	NA	NA	NA	NA
alpha-Chlordane		3,000	490	c	4,400	c	NA	NA	NA	NA	NA	NA
Dieldrin		70	40	c	360	c	NA	NA	NA	NA	NA	NA

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Table B-1. Summary of Positive Detections in Surface Soil Analytical Results, Study Area 17

Naval Training Center, Orlando
Orlando, FL

Identifier	Background	SCTL for Residential Soil	RBC for Residential Soil		RBC for Industrial Soil		17S05901	17S06001	17S06101	17S06201	17S06301	17S06401
Sampling Date							11/17/98	11/17/98	11/17/98	11/17/98	11/17/98	11/17/98
Feet bls							0-1	0-1	0-1	0-1	0-1	0-1
Endrin ketone		ND	23,000	n	610,000	n	NA	NA	NA	NA	NA	NA
gamma-Chlordane		3,000	490	c	4,400	c	NA	NA	NA	NA	NA	NA
Heptachlor		10	140	c	1,300	c	NA	NA	NA	NA	NA	NA
Inorganics, mg/kg												
Aluminum	4,890	72,000	78,000	n	1,000,000	n	NA	NA	NA	NA	NA	NA
Arsenic	1.9	0.8	0.43 /23	c/n	3.8 /610	c/	NA	NA	NA	NA	NA	NA
Barium	21.6	105	5,500	n	140,000	n	NA	NA	NA	NA	NA	NA
Beryllium	0.46	120.0	0.15	c	1.3	c	NA	NA	NA	NA	NA	NA
Cadmium	ND	75	39	n	1,000	n	NA	NA	NA	NA	NA	NA
Calcium	33,568	ND	1,000,000		1,000,000		NA	NA	NA	NA	NA	NA
Chromium	7.7	290	390	n	10,000	n	NA	NA	NA	NA	NA	NA
Cobalt	ND	4,700	4,700,000	n	120,000,000	n	NA	NA	NA	NA	NA	NA
Copper	2.6	105	3,100	n	82,000	n	NA	NA	NA	NA	NA	NA
Iron	843	23,000	23,000	n	610,000	n	NA	NA	NA	NA	NA	NA
Lead	21.3	500	400		400		NA	NA	NA	NA	NA	NA
Magnesium	381	ND	460,468		460,468		NA	NA	NA	NA	NA	NA
Manganese	10.8	1,600	1,800	n	47,000	n	NA	NA	NA	NA	NA	NA
Mercury	0.05	3.7	23	n	610	n	NA	NA	NA	NA	NA	NA
Silver	ND	390	390	n	10,000	n	NA	NA	NA	NA	NA	NA
Sodium	ND	ND	1,000,000		1,000,000		NA	NA	NA	NA	NA	NA
Thallium	ND	ND	6.3	n	160	n	NA	NA	NA	NA	NA	NA
Vanadium	4.9	15	550	n	14,000	n	NA	NA	NA	NA	NA	NA
Zinc	4.6	23,000	23,000	n	610,000	n	NA	NA	NA	NA	NA	NA
General chemistry, mg/kg												
Total Petroleum Hydrocarbons	ND	ND	ND		ND		NA	NA	NA	NA	NA	NA

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Table B-1. Summary of Positive Detections in Surface Soil Analytical Results, Study Area 17

Naval Training Center, Orlando
Orlando, FL

Identifier	Background	SCTL for Residential Soil	RBC for Residential Soil		RBC for Industrial Soil		17S06401D	17S06501	17S06601
Sampling Date							11/17/98	11/17/98	11/17/98
Feet bls							0-1	0-1	0-1
Volatile Organics, µg/kg									
Acetone		770,000	7,800,000	n	200,000,000	n	NA	NA	NA
Xylene (total)		290,000	16,000,000	n	1,000,000,000	n	NA	NA	NA
Semivolatile Organics, µg/kg									
1-Methylnaphthalene		290,000	ND		ND				
2-Methylnaphthalene		1,500,000	3,100,000	n	82,000,000	n			
Acenaphthene		2,300,000	4,700,000	n	120,000,000	n			
Acenaphthylene		1,100,000	ND		ND				
Anthracene		19,000,000	23,000,000	n	610,000,000	n			
Benzo(a)anthracene		1,400	880	c	7,800	c	34,000		
Benzo(a)pyrene		100	88	c	780	c	29,000		13
Benzo(b)fluoranthene		1,400	880	c	7,800	c	32,000		8
Benzo(g,h,i)perylene		2,300,000	2,300,000		61,000,000		18,000		
Benzo(k)fluoranthene		15,000	8,800	c	78,000	c	16,000		5
Butylbenzylphthalate		15,000,000	16,000,000	n	410,000,000	n	NA	NA	NA
Carbazole		53,000	32,000	c	290,000	c	NA	NA	NA
Chrysene		140,000	88,000	c	780,000	c	33,000		
Dibenz(a,h)anthracene		100	88	c	780	c			
Dibenzofuran		270,000	310,000	n	82,000,000	n	NA	NA	NA
Fluoranthene		2,800,000	3,100,000	n	82,000,000	n	100,000		
Fluorene		2,100,000	3,100,000	n	82,000,000	n			
Indeno(1,2,3-cd)pyrene		1,500	880	c	7,800	c	17,000		7
Naphthalene		1,000,000	3,100,000	n	82,000,000	n			
Phenanthrene		1,900,000	2,300,000	n	61,000,000	n			
Pyrene		2,200,000	2,300,000	n	61,000,000	n	68,000		7
Pesticides, µg/kg									
4,4'-DDD		4,500	2,700	c	24,000	c	NA	NA	NA
4,4'-DDE		3,200	1,900	c	17,000	c	NA	NA	NA
4,4'-DDT		3,200	1,900	c	17,000	c	NA	NA	NA
alpha-Chlordane		3,000	490	c	4,400	c	NA	NA	NA
Dieldrin		70	40	c	360	c	NA	NA	NA

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Table B-1. Summary of Positive Detections in Surface Soil Analytical Results, Study Area 17

Naval Training Center, Orlando
Orlando, FL

Identifier	Background	SCTL for Residential Soil	RBC for Residential Soil		RBC for Industrial Soil		17S06401D	17S06501	17S06601
Sampling Date							11/17/98	11/17/98	11/17/98
Feet bls							0-1	0-1	0-1
Endrin ketone		ND	23,000	n	610,000	n	NA	NA	NA
gamma-Chlordane		3,000	490	c	4,400	c	NA	NA	NA
Heptachlor		10	140	c	1,300	c	NA	NA	NA
Inorganics, mg/kg									
Aluminum	4,890	72,000	78,000	n	1,000,000	n	NA	NA	NA
Arsenic	1.9	0.8	0.43 /23	c/n	3.8 /610	c/	NA	NA	NA
Barium	21.6	105	5,500	n	140,000	n	NA	NA	NA
Beryllium	0.46	120.0	0.15	c	1.3	c	NA	NA	NA
Cadmium	ND	75	39	n	1,000	n	NA	NA	NA
Calcium	33,568	ND	1,000,000		1,000,000		NA	NA	NA
Chromium	7.7	290	390	n	10,000	n	NA	NA	NA
Cobalt	ND	4,700	4,700,000	n	120,000,000	n	NA	NA	NA
Copper	2.6	105	3,100	n	82,000	n	NA	NA	NA
Iron	843	23,000	23,000	n	610,000	n	NA	NA	NA
Lead	21.3	500	400		400		NA	NA	NA
Magnesium	381	ND	460,468		460,468		NA	NA	NA
Manganese	10.8	1,600	1,800	n	47,000	n	NA	NA	NA
Mercury	0.05	3.7	23	n	610	n	NA	NA	NA
Silver	ND	390	390	n	10,000	n	NA	NA	NA
Sodium	ND	ND	1,000,000		1,000,000		NA	NA	NA
Thallium	ND	ND	6.3	n	160	n	NA	NA	NA
Vanadium	4.9	15	550	n	14,000	n	NA	NA	NA
Zinc	4.6	23,000	23,000	n	610,000	n	NA	NA	NA
General chemistry, mg/kg									
Total Petroleum Hydrocarbons	ND	ND	ND		ND		NA	NA	NA

Appendix B
Table B-1. Notes to Summary of Positive Detections in Surface Soil Analytical Results
Study Area 17

Naval Training Center, Orlando
Orlando, FL

NOTES:

The background screening value is twice the average of detected concentrations for inorganic analytes.

SCTL = Florida Department of Environmental Protection, Soil Cleanup Target Levels, Chapter 62-785 FAC, April 30, 1998.
Values indicated are for direct exposure scenario. Value for chromium is for chromium (IV).
Value for mercury is for inorganic mercury.

RBC = Risk-Based Concentration Table, USEPA Region III, May 1996, R.L. Smith. RBC for chromium is based on chromium VI. RBC for lead is not available; value is Interim Guidance on Establishing Soil Lead Cleanup Levels at Superfund Sites (OSWER directive 9355-4-12). For essential nutrients (calcium, magnesium, sodium) screening values were derived based on recommended daily allowances.
RBC for benzo(g,h,i)perylene and phenanthrene are not available, value is based on pyrene.

μg/kg = micrograms per DDE = dichlorodiphenyldichloroethene.
mg/kg = milligrams per DDT = dichlorodiphenyltrichloroethane.
n = noncarcinogenic eff DDD = dichlorodiphenyldichloroethane.
c = carcinogenic effects
ND = Not determined
bls = below land surface

B = Reported concentration is between the instrument detection limit and Contract Required Detection Limit.
J = Reported concentration is an estimated quantity.
D = Reported concentrations if from a dilution/reanalysis.
C = Confirmed by gas chromatography/mass spectroscopy.
PF = This laboratory qualifier indicates that the reported result is uncertain since the percent difference between the original and confirmation analysis is greater than 50%.
FDEP = Florida Department of Environmental Protection.
OSWER = Office of Solid Waste and Emergency Response.
USEPA = U S Environmental Protection Agency.
All inorganics results expressed in milligrams per kilogram (mg/kg) soil dry weight; organics in micrograms per kilogram (μg/kg) soil dry weight.

TABLE B-2

SUMMARY OF POSITIVE DETECTIONS IN SUBSURFACE SOIL ANALYTICAL RESULTS

Appendix B

Table B-2. Summary of Positive Detections in Subsurface Soil Analytical Results, Study Area 17

Naval Training Center, Orlando
Orlando, FL

Identifier	Background		SCTL		RBC for Residential Soil		RBC for Industrial Soil		17B00101		17B00201		17B00301		17B00401		17B00502		17B00701		17B00901	
Sampling Date									5/15/95		5/14/95		5/16/95		5/16/95		5/15/95		4/26/95		4/26/95	
Feet bls									**4**		**4**		**4**		**4**		**4**		**5**		**3.5**	
Volatile Organics, µg/kg																						
2-Butanone			NA		47,000,000	n	1,000,000,000	n					3	J								
Acetone			NA		7,800,000	n	200,000,000	n	28				23				41		12	J		
Toluene			NA		16,000,000	n	410,000,000	n														
Xylene (total)			NA		16,000,000	n	1,000,000,000	n														
Semivolatile Organics, µg/kg																						
2-Methylnaphthalene			NA		3,100,000	n	82,000,000	n														
Acenaphthene			NA		4,700,000	n	120,000,000	n														
Anthracene			NA		23,000,000	n	610,000,000	n														
Benzo(a)anthracene			NA		880	c	7,800	c														
Benzo(a)pyrene			NA		88	c	780	c														
Benzo(b)fluoranthene			NA		880	c	7,800	c														
Benzo(g,h,i)perylene			NA		2,300,000		61,000,000															
Benzo(k)fluoranthene			NA		8,800	c	78,000	c														
Butylbenzylphthalate			NA		16,000,000	n	410,000,000	n														
Carbazole			NA		32,000	c	290,000	c														
Chrysene			NA		88,000	c	780,000	c														
Dibenz(a,h)anthracene			NA		88	c	780	c														
Dibenzofuran			NA		310,000	n	82,000,000	n														
Fluoranthene			NA		3,100,000	n	82,000,000	n														
Fluorene			NA		3,100,000	n	82,000,000	n														
Indeno(1,2,3-cd)pyrene			NA		880	c	7,800	c														
Naphthalene			NA		3,100,000	n	82,000,000	n														
Phenanthrene			NA		2,300,000	n	61,000,000	n														
Pyrene			NA		2,300,000	n	61,000,000	n														
Pesticides, µg/kg																						
4,4'-DDD			NA		2,700	c	24,000	c														
4,4'-DDE			NA		1,900	c	17,000	c											7.7	J		
4,4'-DDT			NA		1,900	c	17,000	c					2.9	J	1.6	J						
alpha-Chlordane			NA		490	c	4,400	c					1	J								
Dieldrin			NA		40		360												15			

Appendix B

Table B-2. Summary of Positive Detections in Subsurface Soil Analytical Results, Study Area 17

Naval Training Center, Orlando
Orlando, FL

Identifier	Background	SCTL	RBC for Residential Soil		RBC for Industrial Soil		17B00101		17B00201		17B00301		17B00401		17B00502		17B00701		17B00901	
Sampling Date							5/15/95		5/14/95		5/16/95		5/16/95		5/15/95		4/26/95		4/26/95	
Feet bls							4		4		4		4		4		5		3.5	
Endrin ketone		NA	23,000		610,000												7.3	J		
gamma-Chlordane		NA	490	c	4,400	c					1.2	J								
Heptachlor		NA	140		1,300															
Inorganics, mg/kg																				
Aluminum	11,130	NA	78,000	n	1,000,000	n	6,930		14,800		1,040		509		313		1,390		17,900	
Arsenic	2.0	NA	0.43 /23	c/n	3.8 /610	c/n	0.69	B	0.95	J										
Barium	11.3	NA	5,500		140,000		7.2	J	16.7	J	4	J	2.7	J	2.7	J	3.9	B	17.6	B
Beryllium	0.18	NA	0.15	c	1.3	c	0.03	J	0.12	B										
Cadmium	ND	NA	39	n	1,000	n														
Calcium	321	NA	1,000,000		1,000,000		171	B	816	B	678	B	3,440		33.4	B	306	J	1,320	J
Chromium	11.3	NA	390	n	10,000	n	6		12.6		2.2	B	1.6	B			2.6		18.2	
Cobalt	1.3	NA	4,700,000	n	120,000,000	n			0.97	B							0.81	B	1.7	B
Copper	2.8	NA	3,100	n	82,000	n											0.85	B		
Iron	829	NA	23,000	n	610,000	n	217		666		197		95.6		25.9		1,220	J	1,180	J
Lead	7.0	NA	400		400		4.9	J	11.2	J	2	J	2.1	J	1.8	J	1.8		4.1	
Magnesium	38.9	NA	460,468		460,468		41.5	B	132	B	15.8	B	33.1	B			32.6	B	252	B
Manganese	0.69	NA	1,800	n	47,000	n	0.55	B	1.6	B	1.2	B	1	B	0.35	B	0.81	B	3	B
Mercury	0.12	NA	23	n	610	n													0.05	
Nickel	11.3	NA	1,600	n	41,000	n			4.3	B									5.9	B
Potassium	ND	NA	297,016		297,016														176	B
Selenium	1.4	NA	390	n	10,000	n														
Silver	1.1	NA	390	n	10,000	n														
Sodium	ND	NA	1,000,000		1,000,000				12.4	B									27.6	B
Thallium	ND	NA	6.3	n	160	n											1.8	J		
Vanadium	5.9	NA	550	n	14,000	n	10.1	B	19.9		0.77	B			0.67	B	5.7	B	35.8	
Zinc	0.66	NA	23,000	n	610,000	n			0.95	B	0.91	B					0.51	B	1.1	B
General chemistry, mg/kg																				
Total Petroleum Hydrocarbons	ND	NA	ND		ND				55.1											

Appendix B

Table B-2. Summary of Positive Detections in Subsurface Soil Analytical Results, Study Area 17

Naval Training Center, Orlando
Orlando, FL

Identifier	Background	SCTL	RBC for Residential Soil	RBC for Industrial Soil	17B01001	17B01101	17B01101D	17B01201	17B01301	17B01401	17B01501
Sampling Date					4/26/95	4/26/95	4/26/95	5/26/95	5/26/95	5/26/95	5/26/95
Feet bls					3.5	4.3	4.3	3	3	3	3
Volatile Organics, µg/kg											
2-Butanone		NA	47,000,000 n	1,000,000,000 n							
Acetone		NA	7,800,000 n	200,000,000 n	13		10 J	13	16	28	10 J
Toluene		NA	16,000,000 n	410,000,000 n							
Xylene (total)		NA	16,000,000 n	1,000,000,000 n							
Semivolatile Organics, µg/kg											
2-Methylnaphthalene		NA	3,100,000 n	82,000,000 n					140 J		
Acenaphthene		NA	4,700,000 n	120,000,000 n					1,300		
Anthracene		NA	23,000,000 n	610,000,000 n					2,100		
Benzo(a)anthracene		NA	880 c	7,800 c					5300 D	110 J	
Benzo(a)pyrene		NA	88 c	780 c					4500 D		
Benzo(b)fluoranthene		NA	880 c	7,800 c					4900 D		
Benzo(g,h,i)perylene		NA	2,300,000	61,000,000					3,300 D		
Benzo(k)fluoranthene		NA	8,800 c	78,000 c					2,500		
Butylbenzylphthalate		NA	16,000,000 n	410,000,000 n							
Carbazole		NA	32,000 c	290,000 c					1,700		
Chrysene		NA	88,000 c	780,000 c					5,300 D		
Dibenz(a,h)anthracene		NA	88 c	780 c					1200		
Dibenzofuran		NA	310,000 n	82,000,000 n					700		
Fluoranthene		NA	3,100,000 n	82,000,000 n					12,000 D	190 J	
Fluorene		NA	3,100,000 n	82,000,000 n					1,400		
Indeno(1,2,3-cd)pyrene		NA	880 c	7,800 c					3100		
Naphthalene		NA	3,100,000 n	82,000,000 n					170 J		
Phenanthrene		NA	2,300,000 n	61,000,000 n					10,000 D	120 J	
Pyrene		NA	2,300,000 n	61,000,000 n					9,700 D		
Pesticides, µg/kg											
4,4'-DDD		NA	2,700 c	24,000 c		3.4 J	55 D				
4,4'-DDE		NA	1,900 c	17,000 c		1.5 J	16				3.6 J
4,4'-DDT		NA	1,900 c	17,000 c		2.9 J	28				7.2
alpha-Chlordane		NA	490 c	4,400 c			0.86 J			33	0.87 J
Dieldrin		NA	40	360						35	2.2 J

Appendix B

Table B-2. Summary of Positive Detections in Subsurface Soil Analytical Results, Study Area 17

Naval Training Center, Orlando
Orlando, FL

Identifier	Background	SCTL	RBC for Residential Soil	RBC for Industrial Soil	17B01001	17B01101	17B01101D	17B01201	17B01301	17B01401	17B01501
Sampling Date					4/26/95	4/26/95	4/26/95	5/26/95	5/26/95	5/26/95	5/26/95
Feet bls					3.5	4.3	4.3	3	3	3	3
Endrin ketone		NA	23,000	610,000							
gamma-Chlordane		NA	490 c	4,400 c			1.4 J			69	1.4 J
Heptachlor		NA	140	1,300							
Inorganics, mg/kg											
Aluminum	11,130	NA	78,000 n	1,000,000 n	613	99.6	7,870	3,080	796	849	367
Arsenic	2.0	NA	0.43 /23 c/n	3.8 /610 c/n				2.1 B	1.4 J	1.4 B	0.98 J
Barium	11.3	NA	5,500	140,000	1.7 B	0.34 B	9.8 B	3.8 B	2.1 B	1.2 B	1.1 B
Beryllium	0.18	NA	0.15 c	1.3 c							
Cadmium	ND	NA	39 n	1,000 n							
Calcium	321	NA	1,000,000	1,000,000	232 J	213 J	7,190 J	2,650	2,220	705 B	1,010 B
Chromium	11.3	NA	390 n	10,000 n	1.1 B		6.3	2.7	0.89 B	1.5 B	0.93 B
Cobalt	1.3	NA	4,700,000 n	120,000,000 n			0.91 B				
Copper	2.8	NA	3,100 n	82,000 n				1.7 B		1.6 B	0.33 B
Iron	829	NA	23,000 n	610,000 n	84.1 J	299 J	447 J	190	204	260	188
Lead	7.0	NA	400	400	0.88	0.47 B	3.1	1.5 J	0.98 J	0.99 J	0.43 J
Magnesium	38.9	NA	460,468	460,468	19.5 B	5.7 B	133 B	45.7 B	38.4 B	38.7 B	23.3 B
Manganese	0.69	NA	1,800 n	47,000 n	0.38 B	0.28 B	1.8 B	0.61 B	1.5 B	0.89 B	0.61 B
Mercury	0.12	NA	23 n	610 n							
Nickel	11.3	NA	1,600 n	41,000 n							
Potassium	ND	NA	297,016	297,016							
Selenium	1.4	NA	390 n	10,000 n							
Silver	1.1	NA	390 n	10,000 n							
Sodium	ND	NA	1,000,000	1,000,000					5.7 B	4.9 B	6.1 B
Thallium	ND	NA	6.3 n	160 n	0.51 J	0.52 B	0.75 J				
Vanadium	5.9	NA	550 n	14,000 n	0.69 B		9.9 B	2.9 B	1.3 B	1.6 B	1.1 B
Zinc	0.66	NA	23,000 n	610,000 n	0.41 B	0.46 B	0.82 B	0.48 B	0.77 B	0.79 B	0.68 B
General chemistry, mg/kg											
Total Petroleum Hydrocarbons	ND	NA	ND	ND					34.6	18.3	15.2

Appendix B

Table B-2. Summary of Positive Detections in Subsurface Soil Analytical Results, Study Area 17

Naval Training Center, Orlando
Orlando, FL

Identifier	Background	SCTL	RBC for Residential Soil	RBC for Industrial Soil	17B01601	17B01701	17B01802	17B01902	17B02001	17B02101	17B02101D
Sampling Date					5/26/95	5/26/95	4/25/95	4/26/95	4/25/95	4/25/95	4/25/95
Feet bls					3	3	5.5	4.5	4.5	4	4
Volatile Organics, µg/kg											
2-Butanone		NA	47,000,000 n	1,000,000,000 n							
Acetone		NA	7,800,000 n	200,000,000 n	15	9 J		8 J	7 J	11 J	14
Toluene		NA	16,000,000 n	410,000,000 n							
Xylene (total)		NA	16,000,000 n	1,000,000,000 n							
Semivolatile Organics, µg/kg											
2-Methylnaphthalene		NA	3,100,000 n	82,000,000 n							
Acenaphthene		NA	4,700,000 n	120,000,000 n	410						
Anthracene		NA	23,000,000 n	610,000,000 n	540						
Benzo(a)anthracene		NA	880 c	7,800 c	**2600**						
Benzo(a)pyrene		NA	88 c	780 c	**420**						
Benzo(b)fluoranthene		NA	880 c	7,800 c	**2000**						
Benzo(g,h,i)perylene		NA	2,300,000	61,000,000							
Benzo(k)fluoranthene		NA	8,800 c	78,000 c	1,500						
Butylbenzylphthalate		NA	16,000,000 n	410,000,000 n							
Carbazole		NA	32,000 c	290,000 c	250 J						
Chrysene		NA	88,000 c	780,000 c	2,000						
Dibenz(a,h)anthracene		NA	88 c	780 c	**490**						
Dibenzofuran		NA	310,000 n	82,000,000 n	220 J						
Fluoranthene		NA	3,100,000 n	82,000,000 n	4,400 D						
Fluorene		NA	3,100,000 n	82,000,000 n	500						
Indeno(1,2,3-cd)pyrene		NA	880 c	7,800 c	360 J						
Naphthalene		NA	3,100,000 n	82,000,000 n							
Phenanthrene		NA	2,300,000 n	61,000,000 n	2,600						
Pyrene		NA	2,300,000 n	61,000,000 n	1,200						
Pesticides, µg/kg											
4,4'-DDD		NA	2,700 c	24,000 c	160						
4,4'-DDE		NA	1,900 c	17,000 c	55 N	1.9 J					
4,4'-DDT		NA	1,900 c	17,000 c	200 J	20					
alpha-Chlordane		NA	490 c	4,400 c	45	2.7					
Dieldrin		NA	40	360	28 J						

Appendix B

Table B-2. Summary of Positive Detections in Subsurface Soil Analytical Results, Study Area 17

Naval Training Center, Orlando
Orlando, FL

Identifier	Background	SCTL	RBC for Residential Soil	RBC for Industrial Soil	17B01601	17B01701	17B01802	17B01902	17B02001	17B02101	17B02101D
Sampling Date					5/26/95	5/26/95	4/25/95	4/26/95	4/25/95	4/25/95	4/25/95
Feet bls					3	3	5.5	4.5	4.5	4	4
Endrin ketone		NA	23,000	610,000							
gamma-Chlordane		NA	490 c	4,400 c	50 N	2.8					
Heptachlor		NA	140	1,300							
Inorganics, mg/kg											
Aluminum	11,130	NA	78,000 n	1,000,000 n	2,160	1,870	2,140 J	6,840	10,500 J	4,620 J	3,000 J
Arsenic	2.0	NA	0.43 /23 c/n	3.8 /610 c/n	2.2 B	1.7 B	0.69 B		1.3 B	0.58 B	0.76 B
Barium	11.3	NA	5,500	140,000	9.5 B	3.6 B	4.1 B	9 B	10.6 J	6.1 B	4.1 B
Beryllium	0.18	NA	0.15 c	1.3 c	0.09 B	0.06 B			0.03 B	0.03 B	
Cadmium	ND	NA	39 n	1,000 n							
Calcium	321	NA	1,000,000	1,000,000	77,900	6,880	92.3 B	171 J	211 J	237 J	637 B
Chromium	11.3	NA	390 n	10,000 n	6	2.5	2.2 B	5.4	6.7 J	4.1 J	2.5 J
Cobalt	1.3	NA	4,700,000 n	120,000,000 n	0.71 B		0.73 B	0.78 B	0.82	0.7 B	
Copper	2.8	NA	3,100 n	82,000 n	2.6 B	0.88 B	4.3 B	0.96 B			
Iron	829	NA	23,000 n	610,000 n	691	1,150	69.4 J	260 J	473 J	331 J	208 J
Lead	7.0	NA	400	400	9.7 J	1.4 J	2	3	5.7	1.7	1.8
Magnesium	38.9	NA	460,468	460,468	636 B	92.6 B	15.3 B	55.3 B	87.9 J	68.2 J	45.1 B
Manganese	0.69	NA	1,800 n	47,000 n	11.2	1.5 B	0.36 B	0.99 B	1.1 J	1.2 J	0.78 B
Mercury	0.12	NA	23 n	610 n	0.03 B				0.03 B	0.04 B	0.04 B
Nickel	11.3	NA	1,600 n	41,000 n					5.1 B		
Potassium	ND	NA	297,016	297,016				119 B			
Selenium	1.4	NA	390 n	10,000 n		0.7 B					
Silver	1.1	NA	390 n	10,000 n							
Sodium	ND	NA	1,000,000	1,000,000		5.7 B			10.4 B		
Thallium	ND	NA	6.3 n	160 n							
Vanadium	5.9	NA	550 n	14,000 n	9.6 B	5.5 B	1.7 B	5.5 B	8.1 B	3.5 B	2.6 B
Zinc	0.66	NA	23,000 n	610,000 n	43.9	0.77 B	0.4 J	1 B	0.51 J	0.61 J	0.92 B
General chemistry, mg/kg											
Total Petroleum Hydrocarbons	ND	NA	ND	ND	34.3	10	19.2		9.7	24.5	8.3

Appendix B
Table B-2. Summary of Positive Detections in Subsurface Soil Analytical Results, Study Area 17

Naval Training Center, Orlando
Orlando, FL

Identifier	Background	SCTL	RBC for Residential Soil	RBC for Industrial Soil	17B02201	17B02302	17B02402	17B02502	17B04801	17B05101
Sampling Date					4/25/95	5/26/95	5/26/95	5/26/95	11/25/97	11/25/97
Feet bls					5.5	3	3	3	2-3	2-3
Volatile Organics, µg/kg										
2-Butanone		NA	47,000,000 n	1,000,000,000 n			5 J		NA	NA
Acetone		NA	7,800,000 n	200,000,000 n		17	53		NA	NA
Toluene		NA	16,000,000 n	410,000,000 n				2 J	NA	NA
Xylene (total)		NA	16,000,000 n	1,000,000,000 n					NA	NA
Semivolatile Organics, µg/kg										
2-Methylnaphthalene		NA	3,100,000 n	82,000,000 n						
Acenaphthene		NA	4,700,000 n	120,000,000 n						
Anthracene		NA	23,000,000 n	610,000,000 n						
Benzo(a)anthracene		NA	880 c	7,800 c				170 J		7.4 PF
Benzo(a)pyrene		NA	88 c	780 c				170 J		12
Benzo(b)fluoranthene		NA	880 c	7,800 c				220 J		12
Benzo(g,h,i)perylene		NA	2,300,000	61,000,000				130 J		7.8
Benzo(k)fluoranthene		NA	8,800 c	78,000 c				130 J		6.2
Butylbenzylphthalate		NA	16,000,000 n	410,000,000 n					NA	NA
Carbazole		NA	32,000 c	290,000 c						
Chrysene		NA	88,000 c	780,000 c				190 J		13
Dibenz(a,h)anthracene		NA	88 c	780 c						5.7
Dibenzofuran		NA	310,000 n	82,000,000 n						
Fluoranthene		NA	3,100,000 n	82,000,000 n				310 J		
Fluorene		NA	3,100,000 n	82,000,000 n						
Indeno(1,2,3-cd)pyrene		NA	880 c	7,800 c				110 J		7.8
Naphthalene		NA	3,100,000 n	82,000,000 n						
Phenanthrene		NA	2,300,000 n	61,000,000 n						
Pyrene		NA	2,300,000 n	61,000,000 n				250 J	21	30
Pesticides, µg/kg										
4,4'-DDD		NA	2,700 c	24,000 c					NA	NA
4,4'-DDE		NA	1,900 c	17,000 c				10 J	NA	NA
4,4'-DDT		NA	1,900 c	17,000 c				21 J	NA	NA
alpha-Chlordane		NA	490 c	4,400 c		6.8		12 P	NA	NA
Dieldrin		NA	40	360				12 J	NA	NA

Appendix B

Table B-2. Summary of Positive Detections in Subsurface Soil Analytical Results, Study Area 17

Naval Training Center, Orlando
Orlando, FL

Identifier	Background	SCTL	RBC for Residential Soil	RBC for Industrial Soil	17B02201	17B02302	17B02402	17B02502	17B04801	17B05101
Sampling Date					4/25/95	5/26/95	5/26/95	5/26/95	11/25/97	11/25/97
Feet bls					5.5	3	3	3	2-3	2-3
Endrin ketone		NA	23,000	610,000					NA	NA
gamma-Chlordane		NA	490 c	4,400 c		7		14	NA	NA
Heptachlor		NA	140	1,300					NA	NA
Inorganics, mg/kg										
Aluminum	11,130	NA	78,000 n	1,000,000 n	1,310 J	2,680	5,270	1,640 J	NA	NA
Arsenic	2.0	NA	0.43 /23 c/n	3.8 /610 c/n		1.4 B	1 B	0.57 B	NA	NA
Barium	11.3	NA	5,500	140,000	3.6 B	6.6 B	12 B	8 B	NA	NA
Beryllium	0.18	NA	0.15 c	1.3 c	0.03 B	0.06 B	0.06 B		NA	NA
Cadmium	ND	NA	39 n	1,000 n					NA	NA
Calcium	321	NA	1,000,000	1,000,000	69.9 B	3,380	376 B	15,100	NA	NA
Chromium	11.3	NA	390 n	10,000 n	1.5 B	2.7	4.7	2.1 B	NA	NA
Cobalt	1.3	NA	4,700,000 n	120,000,000 n			0.77 B		NA	NA
Copper	2.8	NA	3,100 n	82,000 n		1.6 B	0.41 B		NA	NA
Iron	829	NA	23,000 n	610,000 n	46.2 J	314	817	710 J	NA	NA
Lead	7.0	NA	400	400	1.6	11.7 J	6.4 J	7.4 J	NA	NA
Magnesium	38.9	NA	460,468	460,468	12.6 B	81.4 B	23 B	210 B	NA	NA
Manganese	0.69	NA	1,800 n	47,000 n	0.44 B	2.4 B	4	5	NA	NA
Mercury	0.12	NA	23 n	610 n	0.04 B		0.03 B		NA	NA
Nickel	11.3	NA	1,600 n	41,000 n					NA	NA
Potassium	ND	NA	297,016	297,016					NA	NA
Selenium	1.4	NA	390 n	10,000 n					NA	NA
Silver	1.1	NA	390 n	10,000 n					NA	NA
Sodium	ND	NA	1,000,000	1,000,000		7.5 B	5.9 B		NA	NA
Thallium	ND	NA	6.3 n	160 n					NA	NA
Vanadium	5.9	NA	550 n	14,000 n		2.7 B	4.5 B	3.1 B	NA	NA
Zinc	0.66	NA	23,000 n	610,000 n		2.6 B	0.71 B	5.2	NA	NA
General chemistry, mg/kg										
Total Petroleum Hydrocarbons	ND	NA	ND	ND	36.5	26.6		39.6	NA	NA

Appendix B

Table B-2. Notes to Summary of Positive Detections in Subsurface Soil Analytical Results, Study Area 17

Naval Training Center, Orlando
Orlando, FL

NOTES:

The background screening value is twice the average of detected concentrations for inorganic analytes.

SCTL = Florida Department of Environmental Protection, Soil Cleanup Target Levels, Chapter 62-785 FAC, April 30, 1998.
SCTL values are not applicable because there is no exceedance of groundwater cleanup target levels.

RBC = Risk-Based Concentration Table, USEPA Region III, May 1996, R.L. Smith. RBC for chromium is based on chromium VI. RBC for lead is not available; value is Interim Guidance on Establishing Soil Lead Cleanup Levels at Superfund Sites (OSWER directive 9355-4-12). For essential nutrients (calcium, magnesium, sodium) screening values were derived based on recommended daily allowances.
RBC for benzo(g,h,i)perylene and phenanthrene are not available, value is based on pyrene.

μg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
n = noncarcinogenic effects
c = carcinogenic effects
ND = Not determined
NA = Not applicable
bls = below land surface

DDE = dichlorodiphenyldichloroethene.
DDT = dichlorodiphenyltrichloroethane.
DDD = dichlorodiphenyldichloroethane.

B = Reported concentration is between the instrument detection limit (IDL) and Contract Required Detection Limit (CRDL).
J = Reported concentration is an estimated quantity.
D = Reported concentrations if from a dilution/reanalysis.
PF = This laboratory qualifier indicates that the reported result is uncertain since the percent difference between the original and confirmation analysis is greater than 50%.
FDEP = Florida Department of Environmental Protection.
OSWER = Office of Solid Waste and Emergency Response.
USEPA = U.S. Environmental Protection Agency.
All inorganics results expressed in milligrams per kilogram (mg/kg) soil dry weight; organics in micrograms per kilogram (μg/kg) soil dry weight.
Bold/shaded values indicate exceedance of regulatory guidance and background.
Blank space indicates analyte/compound was not detected at the reporting limit.

TABLE B-3

SUMMARY OF POSITIVE DETECTIONS IN GROUNDWATER ANALYTICAL RESULTS

Appendix B
Table B-3.1. Summary of Positive Detections in Groundwater Analytical Results
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Well ID						OLD-17-01	OLD-17-02	OLD-17-03	OLD-17-04		
Identifier	Background	FDEPGCTL		FEDMCL	RBC for Tap Water	17G00101	17G00201	17G00301	17G00401	17G00402	17G00403
Sampling Date						5/31/95	5/31/95	5/31/95	5/31/95	6/17/96	2/12/97
Volatile Organics, µg/L											
1,1-Dichloroethane		70	mc/st	ND	810 n						
1,1-Dichloroethene		7	p/c	7	0.044 c				3 J	21 J	16
Carbon disulfide		700	mc/st	ND	1000 n						
Chloroform		5.7	mc/c	100	0.15 c		5				
Chloromethane		2.7	mc/c	ND	1.4 c						
cis-1,2-Dichloroethene		70	p/st	70	61 n				200	600	460 D
m-Dichlorobenzene		10	mc/o	ND	540 n						
n-Butylbenzene		ND		ND	61 n						
n-Propylbenzene		ND		ND	61 n						
Tetrachloroethene		3	p/c	5	1.1 c	0.4 J					
Toluene		40	s/st	1000	750 n						
trans-1,2-Dichloroethene		100	p/st	100	120 n				5 J	10 J	6.9
Trichloroethene		3	p/c	5	1.6 c				42	100	120 D
Vinyl chloride		1	p/c	2	0.019 c				190	810 D	460 D
Semivolatile Organics, µg/L											
bis(2-Ethylhexyl)phthalate		6	p/c	6	4.8 c				1		NA

Appendix B

Table B-3.1. Summary of Positive Detections in Groundwater Analytical Results

Study Area 17

Naval Training Center, Orlando

Orlando, FL

Well ID							OLD-17-01		OLD-17-02		OLD-17-03		OLD-17-04					
Identifier	Background	FDEPGCTL		FEDMCL	RBC for Tap Water		17G00101		17G00201		17G00301		17G00401		17G00402		17G00403	
Sampling Date							5/31/95		5/31/95		5/31/95		5/31/95		6/17/96		2/12/97	
Inorganics, µg/L																		
Aluminum	4,067	200	s	ND	37,000	n	910		4800		6650		1,050		155	BJ	NA	
Antimony	4.1	6	p/st	6	15	n	2.7	J									NA	
Arsenic	5	50	p/c	50	0.045 /11	c/n							2.1	J	1.7	BJ	NA	
Barium	31.4	2,000	p/st	2,000	2,600	n	66.9	J	40.9	J	53.2	J	41.2	J	51	B	NA	
Beryllium	--	4	p/c	4	0.016	c	0.12	J	0.15	J	0.17	J					NA	
Calcium	36,830	ND		ND	1,000,000		136,000		67,600		17,800		36,400		26000		NA	
Chromium	7.8	100	p	100	180	n					6.1	B					NA	
Copper	5.4	1,000	s/st	ND	1500	n											NA	
Iron	1,227	300	s	ND	11000	n	108		1310		14800		8760		10400		NA	
Lead	4	15	p/st	15	15				2.4	B	3.4						NA	
Magnesium	4,560	ND		ND	118,807		14,700		7,240		5,470		10,400		10500		NA	
Manganese	17	50	s/st	ND	180	n	10.5	B	21		28.3		38.5		33.9		NA	
Nickel	--	100	p/st	100	730	n											NA	
Potassium	5,400	ND		ND	297,016				1,460	J	747	J	1,690	J	1560	B	NA	
Silver		100	s/st	ND	180	n									3.1	BJ	NA	
Selenium	9.7	50	p/st	50	180	n					2.3	J					NA	
Sodium	18,222	160,000	p	ND	396,022		16,100		7,960		3,670	B	9,690		8520	J	NA	
Thallium	3.8	2	p	2	2.9	n			4.8	J							NA	
Vanadium	20.6	49	mc/st	ND	260	n	81.5		19.7	B	12.6	B	5.9	B	3.6	B	NA	
Zinc	4	5,000	s/st,	ND	11000	n	2.1	B	3.9	B	2.5	B	3.8	B			NA	
General chemistry, mg/L																		
Total Suspended Solids	ND	ND		ND	ND		5		3		90		3				NA	

Appendix B

Table B-3.1. Summary of Positive Detections in Groundwater Analytical Results
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Well ID						OLD-17-05			OLD-17-T24	OLD-17-06
Identifier	Background	FDEPGCTL	FEDMCL	RBC for Tap Water	17G00404	17G00501	17G00501D	17G00502	17G024T1	17G00601
Sampling Date					19-Jun-98	5/31/95	5/31/95	8-Jun-98	6/2/95	2/12/97
Volatile Organics, µg/L										
1,1-Dichloroethane		70 mc/st	ND	810 n						
1,1-Dichloroethene		7 p/c	7	0.044 c	**26**					
Carbon disulfide		700 mc/st	ND	1000 n		1				
Chloroform		5.7 mc/c	100	0.15 c				0.69 J		
Chloromethane		2.7 mc/c	ND	1.4 c				1.2 J		
cis-1,2-Dichloroethene		70 p/st	70	61 n	**420**					11
m-Dichlorobenzene		10 mc/o	ND	540 n				0.67 J		
n-Butylbenzene		ND	ND	61 n						
n-Propylbenzene		ND	ND	61 n						
Tetrachloroethene		3 p/c	5	1.1 c						
Toluene		40 s/st	1000	750 n						
trans-1,2-Dichloroethene		100 p/st	100	120 n	4.1 J					
Trichloroethene		3 p/c	5	1.6 c	**260**					
Vinyl chloride		1 p/c	2	0.019 c	**350**					**15**
Semivolatile Organics, µg/L										
bis(2-Ethylhexyl)phthalate		6 p/c	6	4.8 c	NA		1	NA	1	NA

Appendix B
Table B-3.1. Summary of Positive Detections in Groundwater Analytical Results
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Well ID								OLD-17-05					OLD-17-T24		OLD-17-06
Identifier	Background	FDEPGCTL		FEDMCL	RBC for Tap Water		17G00404	17G00501		17G00501D		17G00502	17G024T1		17G00601
Sampling Date							19-Jun-98	5/31/95		5/31/95		8-Jun-98	6/2/95		2/12/97
Inorganics, µg/L															
Aluminum	4,067	200	s	ND	37,000	n	NA	473		1,340		NA	551		NA
Antimony	4.1	6	p/st	6	15	n	NA					NA			NA
Arsenic	5	50	p/c	50	0.045 /11	c/n	NA	2.7	J	2.4	J	NA			NA
Barium	31.4	2,000	p/st	2,000	2,600	n	NA	33.2	J	34.4	J	NA	115	J	NA
Beryllium	--	4	p/c	4	0.016	c	NA					NA			NA
Calcium	36,830	ND		ND	1,000,000		NA	34,700		34,000		NA	44,700		NA
Chromium	7.8	100	p	100	180	n	NA					NA	5.2	B	NA
Copper	5.4	1,000	s/st	ND	1500	n	NA	23.8	B			NA			NA
Iron	1,227	300	s	ND	11000	n	NA	7650		6460		NA	100000		NA
Lead	4	15	p/st	15	15		NA					NA			NA
Magnesium	4,560	ND		ND	118,807		NA	6,130		5,670		NA	3,730	B	NA
Manganese	17	50	s/st	ND	180	n	NA	20.2		18.9		NA	265		NA
Nickel	--	100	p/st	100	730	n	NA					NA	25.6	B	NA
Potassium	5,400	ND		ND	297,016		NA	2,090	J	2,140	J	NA	3,330	J	NA
Silver		100	s/st	ND	180	n	NA					NA			NA
Selenium	9.7	50	p/st	50	180	n	NA					NA			NA
Sodium	18,222	160,000	p	ND	396,022		NA	7,090		6,790		NA	4,660	B	NA
Thallium	3.8	2	p	2	2.9	n	NA					NA			NA
Vanadium	20.6	49	mc/st	ND	260	n	NA	6.4	B	7.6	B	NA	4.4	B	NA
Zinc	4	5,000	s/st	ND	11000	n	NA	5.1	B	2.5	B	NA	226		NA
General chemistry, mg/L															
Total Suspended Solids	ND	ND		ND	ND		NA			3		NA	76		NA

Appendix B
Table B-3.1. Summary of Positive Detections in Groundwater Analytical Results
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Well ID									OLD-17-07	OLD-17-08	OLD-17-09	OLD-17-10		
Identifier	Background		FDEPGCTL		FEDMCL		RBC for Tap Water		17G00701	17G00801	17G00901	17G01001	17G01001D	17G01003
Sampling Date									2/12/97	2/12/97	2/12/97	2/12/97	2/12/97	19-Jun-98
Volatile Organics, µg/L														
1,1-Dichloroethane			70	mc/st	ND		810	n						
1,1-Dichloroethene			7	p/c	7		0.044	c						
Carbon disulfide			700	mc/st	ND		1000 n							
Chloroform			5.7	mc/c	100		0.15	c						
Chloromethane			2.7	mc/c	ND		1.4	c						
cis-1,2-Dichloroethene			70	p/st	70		61	n	7.2	40	3.6	3.4	3.2	30
m-Dichlorobenzene			10	mc/o	ND		540	n						
n-Butylbenzene			ND		ND		61	n						
n-Propylbenzene			ND		ND		61	n						
Tetrachloroethene			3	p/c	5		1.1	c						
Toluene			40	s/st	1000		750	n						
trans-1,2-Dichloroethene			100	p/st	100		120	n						
Trichloroethene			3	p/c	5		1.6	c				2.3	2.2	6.9
Vinyl chloride			1	p/c	2		0.019	c	67	2.9	2.6	1.4	1.6	110
Semivolatile Organics, µg/L														
bis(2-Ethylhexyl)phthalate			6	p/c	6		4.8 c		NA	NA	NA	NA	NA	NA

Appendix B
Table B-3.1. Summary of Positive Detections in Groundwater Analytical Results
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Well ID								OLD-17-07	OLD-17-08	OLD-17-09	OLD-17-10		
Identifier	Background	FDEPGCTL		FEDMCL	RBC for Tap Water			17G00701	17G00801	17G00901	17G01001	17G01001D	17G01003
Sampling Date								2/12/97	2/12/97	2/12/97	2/12/97	2/12/97	19-Jun-98
Inorganics, µg/L													
Aluminum	4,067	200	s	ND	37,000	n		NA	NA	NA	NA	NA	NA
Antimony	4.1	6	p/st	6	15	n		NA	NA	NA	NA	NA	NA
Arsenic	5	50	p/c	50	0.045 /11	c/n		NA	NA	NA	NA	NA	NA
Barium	31.4	2,000	p/st	2,000	2,600	n		NA	NA	NA	NA	NA	NA
Beryllium	--	4	p/c	4	0.016	c		NA	NA	NA	NA	NA	NA
Calcium	36,830	ND		ND	1,000,000			NA	NA	NA	NA	NA	NA
Chromium	7.8	100	p	100	180	n		NA	NA	NA	NA	NA	NA
Copper	5.4	1,000	s/st	ND	1500	n		NA	NA	NA	NA	NA	NA
Iron	1,227	300	s	ND	11000	n		NA	NA	NA	NA	NA	NA
Lead	4	15	p/st	15	15			NA	NA	NA	NA	NA	NA
Magnesium	4,560	ND		ND	118,807			NA	NA	NA	NA	NA	NA
Manganese	17	50	s/st	ND	180	n		NA	NA	NA	NA	NA	NA
Nickel	--	100	p/st	100	730	n		NA	NA	NA	NA	NA	NA
Potassium	5,400	ND		ND	297,016			NA	NA	NA	NA	NA	NA
Silver		100	s/st	ND	180	n		NA	NA	NA	NA	NA	NA
Selenium	9.7	50	p/st	50	180	n		NA	NA	NA	NA	NA	NA
Sodium	18,222	160,000	p	ND	396,022			NA	NA	NA	NA	NA	NA
Thallium	3.8	2	p	2	2.9	n		NA	NA	NA	NA	NA	NA
Vanadium	20.6	49	mc/st	ND	260	n		NA	NA	NA	NA	NA	NA
Zinc	4	5,000	s/st	ND	11000	n		NA	NA	NA	NA	NA	NA
General chemistry, mg/L													
Total Suspended Solids	ND	ND		ND	ND			NA	NA	NA	NA	NA	NA

Appendix B

Table B-3.1. Summary of Positive Detections in Groundwater Analytical Results
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Well ID							OLD-17-20	OLD-17-22	OLD-17-23		OLD-17-24	
Identifier	Background	FDEPGCTL		FEDMCL	RBC for Tap Water		17G02001	17G02201	17G02301	17G02301D	17G02401	17G02401D
Sampling Date							11-Jun-98	16-Jun-98	18-Jun-98	18-Jun-98	18-Jun-98	18-Jun-98
Volatile Organics, µg/L												
1,1-Dichloroethane		70	mc/st	ND	810	n	3.4 J					
1,1-Dichloroethene		7	p/c	7	0.044	c	1 J					
Carbon disulfide		700	mc/st	ND	1000	n						
Chloroform		5.7	mc/c	100	0.15	c		0.89 J				
Chloromethane		2.7	mc/c	ND	1.4	c		1.6 J				
cis-1,2-Dichloroethene		70	p/st	70	61	n	98	1.7 J	8.8	9.9		
m-Dichlorobenzene		10	mc/o	ND	540	n						
n-Butylbenzene		ND		ND	61	n						
n-Propylbenzene		ND		ND	61	n						
Tetrachloroethene		3	p/c	5	1.1	c						
Toluene		40	s/st	1000	750	n						
trans-1,2-Dichloroethene		100	p/st	100	120	n	0.76 J					
Trichloroethene		3	p/c	5	1.6	c			20	25	65000	72000
Vinyl chloride		1	p/c	2	0.019	c	140					
Semivolatile Organics, µg/L												
bis(2-Ethylhexyl)phthalate		6	p/c	6	4.8	c	NA	NA	NA	NA	NA	NA

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Table B-3.1. Summary of Positive Detections in Groundwater Analytical Results

Study Area 17

Naval Training Center, Orlando

Orlando, FL

Well ID							OLD-17-20	OLD-17-22	OLD-17-23		OLD-17-24	
Identifier	Background	FDEPGCTL		FEDMCL	RBC for Tap Water		17G02001	17G02201	17G02301	17G02301D	17G02401	17G02401D
Sampling Date							11-Jun-98	16-Jun-98	18-Jun-98	18-Jun-98	18-Jun-98	18-Jun-98
Inorganics, µg/L												
Aluminum	4,067	200	s	ND	37,000	n	NA	NA	NA	NA	NA	NA
Antimony	4.1	6	p/st	6	15	n	NA	NA	NA	NA	NA	NA
Arsenic	5	50	p/c	50	0.045 /11	c/n	NA	NA	NA	NA	NA	NA
Barium	31.4	2,000	p/st	2,000	2,600	n	NA	NA	NA	NA	NA	NA
Beryllium	--	4	p/c.	4	0.016	c	NA	NA	NA	NA	NA	NA
Calcium	36,830	ND		ND	1,000,000		NA	NA	NA	NA	NA	NA
Chromium	7.8	100	p	100	180	n	NA	NA	NA	NA	NA	NA
Copper	5.4	1,000	s/st	ND	1500	n	NA	NA	NA	NA	NA	NA
Iron	1,227	300	s	ND	11000	n	NA	NA	NA	NA	NA	NA
Lead	4	15	p/st	15	15		NA	NA	NA	NA	NA	NA
Magnesium	4,560	ND		ND	118,807		NA	NA	NA	NA	NA	NA
Manganese	17	50	s/st	ND	180	n	NA	NA	NA	NA	NA	NA
Nickel	--	100	p/st	100	730	n	NA	NA	NA	NA	NA	NA
Potassium	5,400	ND		ND	297,016		NA	NA	NA	NA	NA	NA
Silver		100	s/st	ND	180	n	NA	NA	NA	NA	NA	NA
Selenium	9.7	50	p/st	50	180	n	NA	NA	NA	NA	NA	NA
Sodium	18,222	160,000	p	ND	396,022		NA	NA	NA	NA	NA	NA
Thallium	3.8	2	p	2	2.9	n	NA	NA	NA	NA	NA	NA
Vanadium	20.6	49	mc/st	ND	260	n	NA	NA	NA	NA	NA	NA
Zinc	4	5,000	s/st	ND	11000	n	NA	NA	NA	NA	NA	NA
General chemistry, mg/L												
Total Suspended Solids	ND	ND		ND	ND		NA	NA	NA	NA	NA	NA

Appendix B

Table B-3.1. Summary of Positive Detections in Groundwater Analytical Results

Study Area 17

Naval Training Center, Orlando

Orlando, FL

Well ID					OLD-17-25	OLD-17-26	OLD-17-27	OLD-17-28	OLD-17-29	OLD-17-30
Identifier	Background	FDEPGCTL	FEDMCL	RBC for Tap Water	17G02501	17G02601	17G02701	17G02801	17G02901	17G03001
Sampling Date					18-Jun-98	17-Jun-98	17-Jun-98	17-Jun-98	23-Jun-98	23-Jun-98
Volatile Organics, µg/L										
1,1-Dichloroethane		70 mc/st	ND	810 n						
1,1-Dichloroethene		7 p/c	7	0.044 c			6.1 J			
Carbon disulfide		700 mc/st	ND	1000 n						
Chloroform		5.7 mc/c	100	0.15 c						
Chloromethane		2.7 mc/c	ND	1.4 c						
cis-1,2-Dichloroethene		70 p/st	70	61 n	0.78 J	1.9 J	360	2.3 J		1.1 J
m-Dichlorobenzene		10 mc/o	ND	540 n						
n-Butylbenzene		ND	ND	61 n						1.5 J
n-Propylbenzene		ND	ND	61 n						0.81 J
Tetrachloroethene		3 p/c	5	1.1 c	0.49 J					
Toluene		40 s/st	1000	750 n			1.8 J			
trans-1,2-Dichloroethene		100 p/st	100	120 n			12			
Trichloroethene		3 p/c	5	1.6 c	39		60	1.4 J	2.5 J	
Vinyl chloride		1 p/c	2	0.019 c		13	360			[illegible] J
Semivolatile Organics, µg/L										
bis(2-Ethylhexyl)phthalate		6 p/c	6	4.8 c	NA	NA	NA	NA	NA	NA

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Table B-3.1. Summary of Positive Detections in Groundwater Analytical Results
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Well ID									OLD-17-25	OLD-17-26	OLD-17-27	OLD-17-28	OLD-17-29	OLD-17-30
Identifier	Background	FDEPGCTL		FEDMCL		RBC for Tap Water			17G02501	17G02601	17G02701	17G02801	17G02901	17G03001
Sampling Date									18-Jun-98	17-Jun-98	17-Jun-98	17-Jun-98	23-Jun-98	23-Jun-98
Inorganics, µg/L														
Aluminum	4,067	200	s	ND		37,000	n		NA	NA	NA	NA	NA	NA
Antimony	4.1	6	p/st	6		15	n		NA	NA	NA	NA	NA	NA
Arsenic	5	50	p/c	50		0.045 /11	c/n		NA	NA	NA	NA	NA	NA
Barium	31.4	2,000	p/st	2,000		2,600	n		NA	NA	NA	NA	NA	NA
Beryllium	--	4	p/c	4		0.016	c		NA	NA	NA	NA	NA	NA
Calcium	36,830	ND		ND		1,000,000			NA	NA	NA	NA	NA	NA
Chromium	7.8	100	p	100		180	n		NA	NA	NA	NA	NA	NA
Copper	5.4	1,000	s/st	ND		1500	n		NA	NA	NA	NA	NA	NA
Iron	1,227	300	s	ND		11000	n		NA	NA	NA	NA	NA	NA
Lead	4	15	p/st	15		15			NA	NA	NA	NA	NA	NA
Magnesium	4,560	ND		ND		118,807			NA	NA	NA	NA	NA	NA
Manganese	17	50	s/st	ND		180	n		NA	NA	NA	NA	NA	NA
Nickel	--	100	p/st	100		730	n		NA	NA	NA	NA	NA	NA
Potassium	5,400	ND		ND		297,016			NA	NA	NA	NA	NA	NA
Silver		100	s/st	ND		180	n		NA	NA	NA	NA	NA	NA
Selenium	9.7	50	p/st	50		180	n		NA	NA	NA	NA	NA	NA
Sodium	18,222	160,000	p	ND		396,022			NA	NA	NA	NA	NA	NA
Thallium	3.8	2	p	2		2.9	n		NA	NA	NA	NA	NA	NA
Vanadium	20.6	49	mc/st	ND		260	n		NA	NA	NA	NA	NA	NA
Zinc	4	5,000	s/st	ND		11000	n		NA	NA	NA	NA	NA	NA
General chemistry, mg/L														
Total Suspended Solids	ND	ND		ND		ND			NA	NA	NA	NA	NA	NA

Appendix B
Table B-3.1. Summary of Positive Detections in Groundwater Analytical Results
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Well ID									OLD-17-31		OLD-17-32	
Identifier	Background		FDEPGCTL		FEDMCL		RBC for Tap Water		17G03101		17G03201	
Sampling Date									23-Jun-98		23-Jun-98	
Volatile Organics, µg/L												
1,1-Dichloroethane			70	mc/st	ND		810	n				
1,1-Dichloroethene			7	p/c	7		0.044	c				
Carbon disulfide			700	mc/st	ND		1000	n				
Chloroform			5.7	mc/c	100		0.15	c				
Chloromethane			2.7	mc/c	ND		1.4	c				
cis-1,2-Dichloroethene			70	p/st	70		61	n	220		81	
m-Dichlorobenzene			10	mc/o	ND		540	n				
n-Butylbenzene			ND		ND		61	n				
n-Propylbenzene			ND		ND		61	n				
Tetrachloroethene			3	p/c	5		1.1	c				
Toluene			40	s/st	1000		750	n	1	J		
trans-1,2-Dichloroethene			100	p/st	100		120	n	2.2	J	1.9	J
Trichloroethene			3	p/c	5		1.6	c				
Vinyl chloride			1	p/c	2		0.019	c	130		82	
Semivolatile Organics, µg/L												
bis(2-Ethylhexyl)phthalate			6	p/c	6		4.8	c	NA		NA	

Appendix B
Table B-3.1. Summary of Positive Detections in Groundwater Analytical Results
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Well ID									OLD-17-31		OLD-17-32	
Identifier	Background		FDEPGCTL		FEDMCL		RBC for Tap Water		17G03101		17G03201	
Sampling Date									23-Jun-98		23-Jun-98	
Inorganics, µg/L												
Aluminum	4,067		200	s	ND		37,000	n	NA		NA	
Antimony	4.1		6	p/st	6		15	n	NA		NA	
Arsenic	5		50	p/c	50		0.045 /11	c/n	NA		NA	
Barium	31.4		2,000	p/st	2,000		2,600	n	NA		NA	
Beryllium	--		4	p/c	4		0.016	c	NA		NA	
Calcium	36,830		ND		ND		1,000,000		NA		NA	
Chromium	7.8		100	p	100		180	n	NA		NA	
Copper	5.4		1,000	s/st	ND		1500	n	NA		NA	
Iron	1,227		300	s	ND		11000	n	NA		NA	
Lead	4		15	p/st	15		15		NA		NA	
Magnesium	4,560		ND		ND		118,807		NA		NA	
Manganese	17		50	s/st	ND		180	n	NA		NA	
Nickel	--		100	p/st	100		730	n	NA		NA	
Potassium	5,400		ND		ND		297,016		NA		NA	
Silver			100	s/st	ND		180	n	NA		NA	
Selenium	9.7		50	p/st	50		180	n	NA		NA	
Sodium	18,222		160,000	p	ND		396,022		NA		NA	
Thallium	3.8		2	p	2		2.9	n	NA		NA	
Vanadium	20.6		49	mc/st	ND		260	n	NA		NA	
Zinc	4		5,000	s/st	ND		11000	n	NA		NA	
General chemistry, mg/L												
Total Suspended Solids	ND		ND		ND		ND		NA		NA	

Appendix B
Table B-3.1. Notes to Summary of Positive Detections in Groundwater Analytical Results
Study Area 17

Naval Training Center, Orlando
Orlando, FL

NOTES:

Groundwater background screening value is twice the average of detected concentrations for inorganic analytes.
FDEPGCTL = Florida Department of Environmental Protection, Groundwater Cleanup Target Levels, Chapter 62-785 FAC, April 30, 1998.
FEDMCL= Federal Maximum Contaminant Levels, Primary Drinking Water Regulations and Health Advisories, February 1996.
RBC = Risk-Based Concentration Table, USEPA Region III, May 1996, R L. Smith RBC for chromium is based on chromium VI. RBC for lead is not available, value is treatment technology action limit for lead in drinking water distribution system identified in Drinking Water Standards and Health Advisories (USEPA, 1995). For essential nutrients (calcium, magnesium, potassium, and sodium) screening values were derived based on recommended daily allowances.

OLD-17-T24 is a temporary well installed during initial site screening Sample collected from this well on 6/2/95 renamed to 17G024T1 to resolve conflict with sample taken at OLD-17-24 on 6/18/98

s = secondary groundwater standard
st = systemic toxicant
mc = based on minimum criteria
p = primary standard
o = organoleptic.
n = noncarcinogenic effects.
c = carcinogen (GCTLs) or carcinogenic effects (RBCs).
ND = Not determined.
NA = Not analyzed.
USEPA = U.S. Environmental Protection Agency.
B = Reported concentration is between the instrument detection limit and the contract required detection limit.
J = Reported concentration is an estimated quantity
D = Reported concentrations if from a dilution/reanalysis.
µg/L = micrograms per liter
mg/L = miligrams per liter.
Bold/shaded numbers indicate exceedance of groundwater guidance and background.
Blank space indicates analyte/compound was not detected at the reporting limit.

Appendix B

Table B-3.2. Summary of Positive Detections in DPT Groundwater Analytical Results, Groundwater Evaluation, Phase II

Study Area 17

Naval Training Center, Orlando

Orlando, FL

Identifier	FDEPGCTL		FEDMCL		RBC for Tap Water		17Q00104		17Q00202		17Q00305		17Q00308		17Q00403		17Q00703		17Q01005	
Sampling Date							18-Mar-98		17-Mar-98		17-Mar-98		4-Apr-98		17-Mar-98		18-Mar-98		21-Mar-98	
Volatile Organics, μg/L																				
1,1,2-Trichloroethane	5	p/c	5		0.19	c							0.51	J B						
1,1-Dichloroethene	7	p/c	7		0.044	c	2.8	J	78	J									3.3	J
1,2-Dichloroethene (total)	63	mc/st	70		61	n														
Acetone	700	mc/st	ND		3700	n														
Bromoform	4.4	mc/c	100		2.4	c							0.58	J B						
Carbon disulfide	700	mc/st	ND		1000	n														
Chloromethane	2.7	mc/c	ND		1.4	c											1.1	J		
cis-1,2-Dichloroethene	70	p/st	70		61	n	480		5900		8.6		8.7		1300				720	
Hexachlorobutadiene	0.5	mc/c	ND		0.14	c					2.1	J								
m-Dichlorobenzene	600	p/st	ND		540	n							0.65	J B						
Naphthalene	20	o/st	ND		ND		9.3	J			4.2	J								
o-Dichlorobenzene	600	p/st	600		64	n							0.89	J						
p-Dichlorobenzene	75	p/c	75		0.44	c							0.86	J B						
Toluene	40	s/st	1000		750	n	1.9	J							21	J				
trans-1,2-Dichloroethene	100	p/st	100		120	n			69	J									11	J
Trichloroethene	3	p/c	5		1.6	c	380		1300		0.82	J	1.1	J	5700				640	
Vinyl chloride	1	p/c	2		0.019	c	90		2300		2	J	9.6	J	230	J			16	J

Appendix B

Table B-3.2. Summary of Positive Detections in DPT Groundwater Analytical Results, Groundwater Evaluation, Phase II
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Identifier	FDEPGCTL		FEDMCL		RBC for Tap Water		17Q01203		17Q01303		17Q01306		17Q01607		17Q01704		17Q02002		17Q02102	
Sampling Date							20-Mar-98		20-Mar-98		4-Apr-98		4-Apr-98		25-Mar-98		7-Apr-98		7-Apr-98	
Volatile Organics, µg/L																				
1,1,2-Trichloroethane	5	p/c	5		0.19	c														
1,1-Dichloroethene	7	p/c	7		0.044	c	17	J	14	J										
1,2-Dichloroethene (total)	63	mc/st	70		61	n											3400		73	
Acetone	700	mc/st	ND		3700	n														
Bromoform	4.4	mc/c	100		2.4	c														
Carbon disulfide	700	mc/st	ND		1000	n														
Chloromethane	2.7	mc/c	ND		1.4	c														
cis-1,2-Dichloroethene	70	p/st	70		61	n	1900		790		5.6									
Hexachlorobutadiene	0.5	mc/c	ND		0.14	c														
m-Dichlorobenzene	600	p/st	ND		540	n														
Naphthalene	20	o/st	ND		ND															
o-Dichlorobenzene	600	p/st	600		64	n														
p-Dichlorobenzene	75	p/c	75		0.44	c														
Toluene	40	s/st	1000		750	n														
trans-1,2-Dichloroethene	100	p/st	100		120	n	54		45											
Trichloroethene	3	p/c	5		1.6	c	75		1300		8.7		1.9	J	340000				1.5	J
Vinyl chloride	1	p/c	2		0.019	c	140		98	J										

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Table B-3.2. Summary of Positive Detections in DPT Groundwater Analytical Results, Groundwater Evaluation, Phase II Study Area 17

Naval Training Center, Orlando
Orlando, FL

Identifier	FDEPGCTL		FEDMCL		RBC for Tap Water		17Q02404		17Q02703		17Q02805		17Q03001	
Sampling Date							8-Apr-98		9-Apr-98		8-Apr-98		9-Apr-98	
Volatile Organics, µg/L														
1,1,2-Trichloroethane	5	p/c	5		0.19	c								
1,1-Dichloroethene	7	p/c	7		0.044	c					0.17	J	0.12	J
1,2-Dichloroethene (total)	63	mc/st	70		61	n			31		12		9.4	
Acetone	700	mc/st	ND		3700	n	38				20			
Bromoform	4.4	mc/c	100		2.4	c								
Carbon disulfide	700	mc/st	ND		1000	n	4		4.8		1.4			
Chloromethane	2.7	mc/c	ND		1.4	c	0.15	J			0.12	J		
cis-1,2-Dichloroethene	70	p/st	70		61	n								
Hexachlorobutadiene	0.5	mc/c	ND		0.14	c								
m-Dichlorobenzene	600	p/st	ND		540	n								
Naphthalene	20	o/st	ND		ND									
o-Dichlorobenzene	600	p/st	600		64	n								
p-Dichlorobenzene	75	p/c	75		0.44	c								
Toluene	40	s/st	1000		750	n							0.09	J
trans-1,2-Dichloroethene	100	p/st	100		120	n								
Trichloroethene	3	p/c	5		1.6	c					2.3			
Vinyl chloride	1	p/c	2		0.019	c					5.7		1.2	J

Appendix B

Table B-3.2. Notes to Summary of Positive Detections in DPT Groundwater Analytical Results, Groundwater Evaluation, Phase II
Study Area 17

Naval Training Center, Orlando
Orlando, FL

NOTES:

FDEPGCTL = Florida Department of Environmental Protection, Groundwater Cleanup Target Levels, Chapter 62-785 FAC, April 30, 1998.
FEDMCL= Federal Maximum Contaminant Levels, Primary Drinking Water Regulations and Health Advisories, February 1996.
RBC = Risk-Based Concentration Table, USEPA Region III, May 1996, R.L. Smith.

s = secondary groundwater standard.
st = systemic toxicant.
mc = based on minimum criteria
p = primary standard.
n = noncarcinogenic effects.
c = carcinogen (GCTLs) or carcinogenic effects (RBCs).
ND = Not determined
USEPA = U.S. Environmental Protection Agency
J = Reported concentration is an estimated quantity
B = Compound also found in associated laboratory blank.
µg/L = micrograms per liter.
mg/L = miligrams per liter.
Bold/shaded numbers indicate exceedance of groundwater guidance and background.
Blank space indicates analyte/compound was not detected at the reporting limit.

TABLE B-4

SUMMARY OF DETECTIONS IN SURFACE WATER ANALYTICAL RESULTS

Appendix B

Table B-4. Summary of Positive Detections in Surface Water Analytical Results, Study Area 17

Naval Training Center, Orlando
Orlando, FL

Identifier	Surface Water Screening Value	17W02600	17W02700	17W02800	17W02900	17W03001	17W03101	17W03201	17W03301	17W03401
Sampling Date		5/16/95	5/16/95	5/16/95	5/16/95	6/23/98	6/23/98	6/23/98	6/23/98	6/23/98
Volatile Organics, µg/L										
Acetone	700 (6)	13	9 J		7 J					
Chloroform	289 (2)						0.92 J			
Toluene	40 (6)	8 J				5.2	20	17	18	25
Trichloroethene	3 (6)					1.2 J				
Vinyl chloride	1 (6)						0.78 J			
Semivolatile Organics, µg/L										
4-Methylphenol	35 (6)	2				NA	NA	NA	NA	NA
Phenol	256 (2)	4				NA	NA	NA	NA	NA
Inorganics, µg/L										
Aluminum	87 (1,4)	1050	944	418	173 B	NA	NA	NA	NA	NA
Barium	2,000 (8)	31.7 B	26.4 B	367	122 B	NA	NA	NA	NA	NA
Beryllium	0.13 (3)	0.13 B	0.26 B		0.1 B	NA	NA	NA	NA	NA
Calcium	1,055,398 (7)	22,100	19,300	29,500	34,800	NA	NA	NA	NA	NA
Iron	1,000 (1,3)	9400	4000	2140	1790	NA	NA	NA	NA	NA
Lead	1.7 (1,5)	4.9		2.4 B		NA	NA	NA	NA	NA
Magnesium	118,807 (7)	2020 B	2,520 B	4,350 B	6,230	NA	NA	NA	NA	NA
Manganese	50 (6)	73.8	30.9	22	16.2	NA	NA	NA	NA	NA
Potassium	297,016 (7)	1930 B	3,220 B	1,420 B	1,140 B	NA	NA	NA	NA	NA
Silver	0.012 (3)	2.6 B				NA	NA	NA	NA	NA
Sodium	396,022 (7)	2,180 B	2,730 B	7,580	14,600	NA	NA	NA	NA	NA
Zinc	67 (1,5)	37.5	52.1	23.5		NA	NA	NA	NA	NA
General chemistry, mg/L										
Alkalinity as CaCO3	NA	47	39	71	97	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons	NA	1	2.8	2.4	2	NA	NA	NA	NA	NA

Appendix B

Table B-4. Notes to Summary of Positive Detections in Surface Water Analytical Results, Study Area 17

Naval Training Center, Orlando
Orlando, FL

NOTES:

[1] Federal Ambient Water Criteria, chronic values (USEPA, 1991; 1988)
[2] USEPA Region IV Waste Management Division Chronic Freshwater Quality Screening Values based on the Water Quality Standards Units Screening List (USEPA, 1992).
[3] Chapter 62-302. Florida Administrative Code Surface Water Quality Standards; 1995
[4] Criterion is based on pH of 6.5 - 9 (USEPA, 1988).
[5] Hardness dependent criterion. Values shown are for SA 16/SA 17/SA 22. Average water hardnesses of 30, 63.5, and 19.3 mg/L CaCO3 were used to calculate criteria for Study Areas 16, 17, and 22, respectively. The average water hardness of 19.3 mg/L for Study Area 22 is below the range of water hardnesses to be used in calculating AWQC (i.e., 25 to 400 mg/L). Therefore, a hardness of 25 mg/L (the lowest usable hardness value) was used to calculate criteria for Study Area 22.
[6] Florida Department of Environmental Protection Groundwater Guidance Concentration, June 1994, Systemic Toxicant.
[7] Risk-Based Concentration Table, USEPA Region III, October, 1995, R.L. Smith. For essential nutrients (calcium, magnesium, potassium, and sodium) screening values were based on recommended daily allowances (RDAs).
[8] Florida Department of Environmental Protection Guidance Concentration, June 1994, Primary Standard.

J = Reported concentration is an estimated quantity.
µg/L = micrograms per liter. mg/L = milligrams per liter.
B = Reported concentration is between the instrument detection limit and Contract Required Detection Limit.

Blank space indicates analyte/compound was not detected at the reporting limit.

TABLE B-5

SUMMARY OF DETECTIONS IN SEDIMENT ANALYTICAL RESULTS

Appendix B
Table B-5. Summary of Positive Detections in Sediment Analytical Results
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Identifier	FDEP PEL	17D02600	17D02700	17D02800	17D02900	17D03001	17D03101	17D03201	17D03301	17D03401
Sampling Date		5/26/95	5/26/95	5/26/95	5/26/95	23-Jun-98	23-Jun-98	23-Jun-98	23-Jun-98	23-Jun-98
Volatile Organics, µg/kg										
Methylene chloride	ND					4.4 J	4.8 J	5.1 J	6 J	3.6 J
Toluene	ND								1 J	0.51 J
Vinyl chloride	ND						0.72 J			
2-Butanone	ND		6 J							
Acetone	ND	9 J	21	30	14 J					
Semivolatile Organics, µg/kg										
Acenaphthene	450			410 J		NA	NA	NA	NA	NA
Anthracene	740			310 J		NA	NA	NA	NA	NA
Benzo(a)anthracene	1300			1,000		NA	NA	NA	NA	NA
Benzo(b)fluoranthene	ND			660 J		NA	NA	NA	NA	NA
Benzo(k)fluoranthene	ND			590 J		NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	ND			630 J		NA	NA	NA	NA	NA
Chrysene	1700			820		NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	320			210 J		NA	NA	NA	NA	NA
Fluoranthene	3200		150 J	2,100	180 J	NA	NA	NA	NA	NA
Fluorene	ND			320 J		NA	NA	NA	NA	NA
Phenanthrene	1200			700		NA	NA	NA	NA	NA
Pyrene	1900			540 J		NA	NA	NA	NA	NA
Pesticides/PCBs, µg/kg										
4,4'-DDD	ND		19 J	990 DJ	24 NJ	NA	NA	NA	NA	NA
4,4'-DDE	130		13	130 J	15	NA	NA	NA	NA	NA
alpha-Chlordane	ND		5.4	890 CD	14	NA	NA	NA	NA	NA
Dieldrin	ND				3.3 J	NA	NA	NA	NA	NA
gamma-Chlordane	ND		11	1,800 CD	41	NA	NA	NA	NA	NA
Inorganics, mg/kg										
Aluminum	ND	520	2,480	2,970	1,540	NA	NA	NA	NA	NA
Arsenic	64	1.5 B	1.6 J	3.5 J	1.5 J	NA	NA	NA	NA	NA
Barium	ND	1.7 B	9.2 B	21.4 B	6.8 B	NA	NA	NA	NA	NA
Beryllium	ND		0.11 B	0.22 B	0.15 B	NA	NA	NA	NA	NA

Appendix B
Table B-5. Summary of Positive Detections in Sediment Analytical Results
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Identifier	FDEP PEL	17D02600	17D02700	17D02800	17D02900	17D03001	17D03101	17D03201	17D03301	17D03401
Sampling Date		5/26/95	5/26/95	5/26/95	5/26/95	23-Jun-98	23-Jun-98	23-Jun-98	23-Jun-98	23-Jun-98
Cadmium	7.5				1.4 B	NA	NA	NA	NA	NA
Calcium	ND	112 B	353 B	12,600	14,500	NA	NA	NA	NA	NA
Chromium	240	0.95 B	3.9	8.6	4.6	NA	NA	NA	NA	NA
Cobalt	ND			2.3 B		NA	NA	NA	NA	NA
Copper	170	1.1 B	4.2 B	11.1 B	3.9 B	NA	NA	NA	NA	NA
Iron	ND	232	1,470	2,500	1,250	NA	NA	NA	NA	NA
Lead	160	0.89 J	15.1 J	45.2 J	15.8 J	NA	NA	NA	NA	NA
Magnesium	ND	12 B	80.3 B	191 B	141 B	NA	NA	NA	NA	NA
Manganese	ND	0.3 B	1.4 B	4.7 B	2.1 B	NA	NA	NA	NA	NA
Mercury	1.4		0.09	0.27	0.06 B	NA	NA	NA	NA	NA
Sodium	ND		10.1 B	23.5 B	22.3 B	NA	NA	NA	NA	NA
Vanadium	ND	2.5 B	4.7 B	10.2 B	6.1 B	NA	NA	NA	NA	NA
Zinc	300	6.2	30.5	78.5	35	NA	NA	NA	NA	NA
General chemistry, mg/kg										
Total Organic Carbon	NA	2,130	7,800	24,400	9,770	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons	NA	5.5	73.5	892	162	NA	NA	NA	NA	NA

Appendix B
Table B-5. Notes to Summary of Positive Detections in Sediment Analytical Results
Study Area 17

Naval Training Center, Orlando
Orlando, FL

NOTES:

FDEP PEL = Florida Department of Environmental Protection, Probable Effects Level from MacDonald, 1994.
Approach to the Assessment of Sediment Quality in Florida Coastal Waters. Volume I - Development and Evaluation of Sediment Quality Guidelines.
Prepared by MacDonald Environmental Sciences, Ltd.

ND = Not determined.
mg/kg = milligrams per kilogram
µg/kg = micrograms per liter.
J = Reported concentration is an estimated quantity.
B = For inorganics, reported concentration is between the instrument detection limit and Contract Required Detection Limit.
C = Presence of this compound was confirmed by GC/MS (gas chromatograph/ mass spectrometry)
D = Indicates value was determined during a diluted reanalysis.

All inorganics results expressed in milligrams per kilogram (mg/kg) soil dry weight; organics in micrograms per kilogram (µg/kg) soil dry weight.
Blank space indicates analyte/compound was not detected at the reporting limit.

APPENDIX C

SUMMARY OF ANALYTICAL RESULTS (CONTRACT LABORATORY PROCEDURE LABORATORY)

TABLE C-1

SUMMARY OF SOIL ANALYTICAL RESULTS

Appendix C
Table C-1. Summary of Soil Analytical Results
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Sample ID	17B00101		17B00201		17B00301		17B00401		17B00502		17B00701		17B00801		17B00901		17B01001		17B01101		17B01101D		17B01201		17B01301	
Lab ID	G7583004		G7562004		G7583007		G7583006		G7583005		G7427001		G7427002		G7427003		G7427004		G7427005		G7427006		G7678011		G7678012	
Sampling Date	15-May-95		14-May-95		16-May-95		16-May-95		15-May-95		26-Apr-95		26-Apr-95		26-Apr-95		26-Apr-95		26-Apr-95		26-Apr-95		26-May-95		26-May-95	
Volatile organics, µg/kg																										
1,1,1-Trichloroethane	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U	13	U	12	U	12	U	12	U	12	U
1,1,2,2-Tetrachloroethane	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U	13	U	12	U	12	U	12	U	12	U
1,1,2-Trichloroethane	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U	13	U	12	U	12	U	12	U	12	U
1,1-Dichloroethane	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U	13	U	12	U	12	U	12	U	12	U
1,1-Dichloroethene	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U	13	U	12	U	12	U	12	U	12	U
1,2-Dichloroethane	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U	13	U	12	U	12	U	12	U	12	U
1,2-Dichloroethene (total)	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U	13	U	12	U	12	U	12	U	12	U
1,2-Dichloropropane	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U	13	U	12	U	12	U	12	U	12	U
2-Butanone	12	U	12	U	3	J	12	U	12	U	12	U	11	U	12	U	13	U	12	U	12	U	12	U	12	U
2-Hexanone	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U	13	U	12	U	12	U	12	U	12	U
4-Methyl-2-pentanone	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U	13	U	12	U	12	U	12	U	12	U
Acetone	28		12	U	23		12	U	41		12	J	11	U	12	U	13		12	U	10	J	13		16	
Benzene	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U	13	U	12	U	12	U	12	U	12	U
Bromodichloromethane	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U	13	U	12	U	12	U	12	U	12	U
Bromoform	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U	13	U	12	U	12	U	12	U	12	U
Bromomethane	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U	13	U	12	U	12	U	12	U	12	U
Carbon disulfide	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U	13	U	12	U	12	U	12	U	12	U
Carbon tetrachloride	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U	13	U	12	U	12	U	12	U	12	U
Chlorobenzene	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U	13	U	12	U	12	U	12	U	12	U
Chloroethane	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U	13	U	12	U	12	U	12	U	12	U
Chloroform	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U	13	U	12	U	12	U	12	U	12	U
Chloromethane	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U	13	U	12	U	12	U	12	U	12	U
cis-1,3-Dichloropropene	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U	13	U	12	U	12	U	12	U	12	U
Dibromochloromethane	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U	13	U	12	U	12	U	12	U	12	U
Ethylbenzene	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U	13	U	12	U	12	U	12	U	12	U
Methylene chloride	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U	13	U	12	U	12	U	12	U	12	U
Styrene	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U	13	U	12	U	12	U	12	U	12	U
Tetrachloroethene	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U	13	U	12	U	12	U	12	U	12	U
Toluene	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U	13	U	12	U	12	U	12	U	12	U
trans-1,3-Dichloropropene	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U	13	U	12	U	12	U	12	U	12	U
Trichloroethene	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U	13	U	12	U	12	U	12	U	12	U
Vinyl chloride	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U	13	U	12	U	12	U	12	U	12	U
Xylene (total)	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U	13	U	12	U	12	U	12	U	12	U
Semivolatile organics, µg/kg																										
1,2,4-Trichlorobenzene	540	U	400	U	0	U	400	U	410	U	420	U	360	U	390	U	410	U	410	U	410	U	400	U	390	U
1,2-Dichlorobenzene	540	U	400	U	400	U	400	U	410	U	420	U	360	U	390	U	410	U	410	U	410	U	400	U	390	U
1,3-Dichlorobenzene	540	U	400	U	400	U	400	U	410	U	420	U	360	U	390	U	410	U	410	U	410	U	400	U	390	U
1,4-Dichlorobenzene	540	U	400	U	400	U	400	U	410	U	420	U	360	U	390	U	410	U	410	U	410	U	400	U	390	U
2,2'-oxybis(1-Chloropropane)	540	U	400	U	400	U	400	U	410	U	420	U	360	U	390	U	410	U	410	U	410	U	400	U	390	U

Appendix C
Table C-1. Summary of Soil Analytical Results
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Sample ID	17B00101	17B00201	17B00301	17B00401	17B00502	17B00701	17B00801	17B00901	17B01001	17B01101	17B01101D	17B01201	17B01301
Lab ID	G7583004	G7562004	G7583007	G7583006	G7583005	G7427001	G7427002	G7427003	G7427004	G7427005	G7427006	G7678011	G7678012
Sampling Date	15-May-95	14-May-95	16-May-95	16-May-95	15-May-95	26-Apr-95	26-Apr-95	26-Apr-95	26-Apr-95	26-Apr-95	26-Apr-95	26-May-95	26-May-95
2,4,5-Trichlorophenol	1300 U	1000 U	1000 U	1000 U	1000 U	1000 U	900 U	970 U	1000 U	1000 U	1000 U	990 U	970 U
2,4,6-Trichlorophenol	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	390 U
2,4-Dichlorophenol	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	390 U
2,4-Dimethylphenol	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	390 U
2,4-Dinitrophenol	1300 U	1000 U	1000 U	1000 U	1000 U	1000 U	900 U	970 U	1000 U	1000 U	1000 U	990 U	970 U
2,4-Dinitrotoluene	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	390 U
2,6-Dinitrotoluene	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	390 U
2-Chloronaphthalene	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	390 U
2-Chlorophenol	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	390 U
2-Methylnaphthalene	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	140 J
2-Methylphenol	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	390 U
2-Nitroaniline	1300 U	1000 U	1000 U	1000 U	1000 U	1000 U	900 U	970 U	1000 U	1000 U	1000 U	990 U	970 U
2-Nitrophenol	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	390 U
3,3'-Dichlorobenzidine	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	390 U
3-Nitroaniline	1300 U	1000 U	1000 U	1000 U	1000 U	1000 U	900 U	970 U	1000 U	1000 U	1000 U	990 U	970 U
4,6-Dinitro-2-methylphenol	1300 U	1000 U	1000 U	1000 U	1000 U	1000 U	900 U	970 U	1000 U	1000 U	1000 U	990 U	970 U
4-Bromophenyl-phenylether	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	390 U
4-Chloro-3-methylphenol	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	390 U
4-Chloroaniline	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	390 U
4-Chlorophenyl-phenylether	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	390 U
4-Methylphenol	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	390 U
4-Nitroaniline	1300 U	1000 U	1000 U	1000 U	1000 U	1000 U	900 U	970 U	1000 U	1000 U	1000 U	990 U	970 U
4-Nitrophenol	1300 U	1000 U	1000 U	1000 U	1000 U	1000 U	900 U	970 U	1000 U	1000 U	1000 U	990 U	970 U
Acenaphthene	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	1300
Acenaphthylene	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	390 U
Anthracene	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	2100
Benzo(a)anthracene	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	5300 D
Benzo(a)pyrene	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	4500 D
Benzo(b)fluoranthene	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	4900 D
Benzo(g,h,i)perylene	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	3300 D
Benzo(k)fluoranthene	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	2500
bis(2-Chloroethoxy)methane	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	390 U
bis(2-Chloroethyl)ether	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	390 U
bis(2-Ethylhexyl)phthalate	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	390 U
Butylbenzylphthalate	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	390 U
Carbazole	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	1700
Chrysene	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	5300 D
Di-n-butylphthalate	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	390 U
Di-n-octylphthalate	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	390 U
Dibenz(a,h)anthracene	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	1200

Appendix C
Table C-1. Summary of Soil Analytical Results
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Sample ID	17B00101	17B00201	17B00301	17B00401	17B00502	17B00701	17B00801	17B00901	17B01001	17B01101	17B01101D	17B01201	17B01301
Lab ID	G7583004	G7562004	G7583007	G7583006	G7583005	G7427001	G7427002	G7427003	G7427004	G7427005	G7427006	G7678011	G7678012
Sampling Date	15-May-95	14-May-95	16-May-95	16-May-95	15-May-95	26-Apr-95	26-Apr-95	26-Apr-95	26-Apr-95	26-Apr-95	26-Apr-95	26-May-95	26-May-95
Dibenzofuran	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	700
Diethylphthalate	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	390 U
Dimethylphthalate	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	390 U
Fluoranthene	540 U	400 U	400 U	400 U	410 U	420 U	130 J	390 U	410 U	410 U	410 U	400 U	12000 D
Fluorene	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	1400
Hexachlorobenzene	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	390 U
Hexachlorobutadiene	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	390 U
Hexachlorocyclopentadiene	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	390 U
Hexachloroethane	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	390 U
Indeno(1,2,3-cd)pyrene	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	3100
Isophorone	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	390 U
N-Nitroso-di-n-propylamine	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	390 U
N-Nitrosodiphenylamine (1)	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	390 U
Naphthalene	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	170 J
Nitrobenzene	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	390 U
Pentachlorophenol	1300 U	1000 U	1000 U	1000 U	1000 U	1000 U	900 U	970 U	1000 U	1000 U	1000 U	990 U	970 U
Phenanthrene	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	10000 D
Phenol	540 U	400 U	400 U	400 U	410 U	420 U	360 U	390 U	410 U	410 U	410 U	400 U	390 U
Pyrene	540 U	400 U	400 U	400 U	410 U	420 U	140 J	390 U	410 U	410 U	410 U	400 U	9700 D
Pesticides/PCBs, µg/kg													
4,4'-DDD	4 U	3.9 U	4.1 U	4 U	4.2 U	8 U	9.1 U	3.8 U	4.1 U	3.4 J	55 D	4 U	38 U
4,4'-DDE	4 U	3.9 U	4.1 U	4 U	4.2 U	7.7 NJ	9.1 U	3.8 U	4.1 U	1.5 J	16	4 U	38 U
4,4'-DDT	4 U	3.9 U	2.9 J	1.6 J	4.2 U	8 U	9.1 U	3.8 U	4.1 U	2.9 J	28	4 U	38 U
Aldrin	2 U	2 U	2.1 U	2 U	2.2 U	4.1 U	4.7 U	2 U	2.1 U	2 U	2 U	2 U	20 U
alpha-BHC	2 U	2 U	2.1 U	2 U	2.2 U	4.1 U	4.7 U	2 U	2.1 U	2 U	2 U	2 U	20 U
alpha-Chlordane	2 U	2 U	1 J	2 U	2.2 U	4.1 U	4.7 U	2 U	2.1 U	2 U	0.86 J	2 U	20 U
Aroclor-1016	40 U	39 U	41 U	40 U	42 U	80 U	91 U	38 U	41 U	39 U	40 U	40 U	380 U
Aroclor-1221	81 U	79 U	83 U	81 U	85 U	160 U	180 U	77 U	83 U	80 U	81 U	81 U	780 U
Aroclor-1232	40 U	39 U	41 U	40 U	42 U	80 U	91 U	38 U	41 U	39 U	40 U	40 U	380 U
Aroclor-1242	40 U	39 U	41 U	40 U	42 U	80 U	91 U	38 U	41 U	39 U	40 U	40 U	380 U
Aroclor-1248	40 U	39 U	41 U	40 U	42 U	80 U	91 U	38 U	41 U	39 U	40 U	40 U	380 U
Aroclor-1254	40 U	39 U	41 U	40 U	42 U	80 U	91 U	38 U	41 U	39 U	40 U	40 U	380 U
Aroclor-1260	40 U	39 U	41 U	40 U	42 U	80 U	91 U	38 U	41 U	39 U	40 U	40 U	380 U
beta-BHC	2 U	2 U	2.1 U	2 U	2.2 U	4.1 U	4.7 U	2 U	2.1 U	2 U	2 U	2 U	20 U
delta-BHC	2 U	2 U	2.1 U	2 U	2.2 U	4.1 U	4.7 U	2 U	2.1 U	2 U	2 U	2 U	20 U
Dieldrin	4 U	3.9 U	4.1 U	4 U	4.2 U	15	9.1 U	3.8 U	4.1 U	3.9 U	4 U	4 U	38 U
Endosulfan I	2 U	2 U	2.1 U	2 U	2.2 U	4.1 U	4.7 U	2 U	2.1 U	2 U	2 U	2 U	20 U
Endosulfan II	4 U	3.9 U	4.1 U	4 U	4.2 U	8 U	9.1 U	3.8 U	4.1 U	3.9 U	4 U	4 U	38 U
Endosulfan sulfate	4 U	3.9 U	4.1 U	4 U	4.2 U	8 U	9.1 U	3.8 U	4.1 U	3.9 U	4 U	4 U	38 U
Endrin	4 U	3.9 U	4.1 U	4 U	4.2 U	8 U	9.1 U	3.8 U	4.1 U	3.9 U	4 U	4 U	38 U

Appendix C
Table C-1. Summary of Soil Analytical Results
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Sample ID	17B00101	17B00201	17B00301	17B00401	17B00502	17B00701	17B00801	17B00901	17B01001	17B01101	17B01101D	17B01201	17B01301
Lab ID	G7583004	G7562004	G7583007	G7583006	G7583005	G7427001	G7427002	G7427003	G7427004	G7427005	G7427006	G7678011	G7678012
Sampling Date	15-May-95	14-May-95	16-May-95	16-May-95	15-May-95	26-Apr-95	26-Apr-95	26-Apr-95	26-Apr-95	26-Apr-95	26-Apr-95	26-May-95	26-May-95
Endrin aldehyde	4 U	3.9 U	4.1 U	4 U	4.2 U	8 U	9.1 U	3.8 U	4.1 U	3.9 U	4 U	4 U	38 U
Endrin ketone	4 U	3.9 U	4.1 U	4 U	4.2 U	7.3 J	9.1 U	3.8 U	4.1 U	3.9 U	4 U	4 U	38 U
gamma-BHC (Lindane)	2 U	2 U	2.1 U	2 U	2.2 U	4.1 U	4.7 U	2 U	2.1 U	2 U	2 U	2 U	20 U
gamma-Chlordane	2 U	2 U	1.2 J	2 U	2.2 U	4.1 U	4.7 U	2 U	2.1 U	2 U	1.4 J	2 U	20 U
Heptachlor	2 U	2 U	2.1 U	2 U	2.2 U	4.1 U	4.7 U	2 U	2.1 U	2 U	2 U	2 U	20 U
Heptachlor epoxide	2 U	2 U	2.1 U	2 U	2.2 U	4.1 U	4.7 U	2 U	2.1 U	2 U	2 U	2 U	20 U
Methoxychlor	20 U	20 U	21 U	20 U	22 U	41 U	47 U	20 U	21 U	20 U	20 U	20 U	200 U
Toxaphene	200 U	200 U	210 U	200 U	220 U	410 U	470 U	200 U	210 U	200 U	200 U	200 U	2000 U
Inorganics, mg/kg													
Aluminum	6930	14800	1040	509	313	1390	1080	17900	613	99.6	7870	3080	796
Antimony	7.1 UJ	7 UJ	7.5 UJ	7.3 UJ	7.2 UJ	7.2 U	6.6 U	6.9 U	7.5 U	7 U	6.9 U	7.2 U	6.9 U
Arsenic	0.69 B	0.95 J	0.48 U	0.47 UJ	0.46 U	0.57 U	0.47 U	1.1 U	0.6 U	0.62 U	0.81 U	2.1 B	1.4 J
Barium	7.2 J	16.7 J	4 J	2.7 J	2.7 J	3.9 B	2.3 B	17.6 B	1.7 B	0.34 B	9.8 B	3.8 B	2.1 B
Beryllium	0.03 J	0.12 B	0.03 UJ		0.02 UJ	0.03 U	0.06 U	0.27 U	0.03 U	0.04 U	0.11 U	0.02 U	0.02 U
Cadmium	0.74 U	0.74 U	0.78 U	0.76 UJ	0.76 U	0.76 U	0.69 U	0.72 U	0.79 U	0.73 U	0.72 U	0.76 U	0.72 U
Calcium	171 B	816 B	678 B	3440	33.4 B	306 J	745 J	1320 J	232 J	213 J	7190 J	2650	2220
Chromium	6	12.6	2.2 B	1.6 B	0.76 U	2.6	1.6 B	18.2	1.1 B	0.73 U	6.3	2.7	0.89 B
Cobalt	0.69 U	0.97 B	0.73 U	0.71 U	0.71 U	0.81 B	0.65 U	1.7 B	0.74 U	0.68 U	0.91 B	0.71 U	0.67 U
Copper	0.34 U	0.33 U	0.38 U	0.34 U	0.4 U	0.85 B	0.69 B	0.32 U	0.35 U	0.33 U	0.33 U	1.7 B	0.33 U
Iron	217	666	197	95.6	25.9	1220 J	155 J	1180 J	84.1 J	299 J	447 J	190	204
Lead	4.9 J	11.2 J	2 J	2.1 J	1.8 J	1.8	2.1	4.1	0.88	0.47 B	3.1	1.5 J	0.98 J
Magnesium	41.5 B	132 B	15.8 B	33.1 B	4.9 U	32.6 B	19.5 B	252 B	19.5 B	5.7 B	133 B	45.7 B	38.4 B
Manganese	0.55 B	1.6 B	1.2 B	1 B	0.35 B	0.81 B	1.7 B	3 B	0.38 B	0.28 B	1.8 B	0.61 B	1.5 B
Mercury	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 B	0.05	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Nickel	3.4 U	4.3 B	3.6 U	3.5 U	3.5 U	3.5 U	3.2 U	5.9 B	3.6 U	3.4 U	3.3 U	3.5 U	3.3 U
Potassium	106 U	105 U	112 U	109 U	108 U	108 U	98.8 U	176 B	112 U	105 U	104 U	109 U	103 U
Selenium	0.55 U	0.54 U	0.58 U	0.56 U	0.56 UJ	0.56 U	0.51 UJ	0.53 U	0.58 UJ	0.54 UJ	0.54 UJ	0.56 U	0.53 U
Silver	0.62 U	0.62 U	0.66 U	0.64 U	0.63 U	0.63 U	0.58 U	0.6 U	0.66 U	0.61 U	0.61 U	0.64 U	0.6 U
Sodium	4 U	12.4 B	4.3 U	4.2 U	4.1 U	12 U	9.1 U	27.6 B	10.7 U	8.4 U	18.1 U	4.1 U	5.7 B
Thallium	0.43 U	0.43 U	0.46 UJ	0.45 U	0.44 U	1.8 J	0.42 U	0.43 U	0.51 J	0.52 B	0.75 J	0.44 U	0.42 U
Vanadium	10.1 B	19.9	0.77 B	0.62 U	0.67 B	5.7 B	0.89 B	35.8	0.69 B	0.59 U	9.9 B	2.9 B	1.3 B
Zinc	0.66 U	0.95 B	0.91 B	0.54 U	0.81 U	0.51 B	11.4	1.1 B	0.41 B	0.46 B	0.82 B	0.48 B	0.77 B
General Chemistry, mg/kg													
Total Petroleum Hydrocarbons	4.7 U	55.1	5 U	4.9 U	4.8 U	4.9 U	5.8	4.6 U	5.1 U	4.7 U	4.7 U	4.9 U	34.6

Appendix C
Table C-1. Summary of Soil Analytical Results
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Sample ID	17B01401	17B01501	17B01601	17B01701	17B01801	17B01802	17B01901	17B01902	17B02001	17B02101	17B02101D	17B02201	17B02301
Lab ID	G7678013	G7678010	G7678015	G7678014	G7415006	G7415004	G7427007	G7427008	G7415005	G7415003	G7415002	G7415007	G7678016
Sampling Date	26-May-95	26-May-95	26-May-95	26-May-95	25-Apr-95	25-Apr-95	26-Apr-95	26-Apr-95	25-Apr-95	25-Apr-95	25-Apr-95	25-Apr-95	26-May-95
Volatile organics, µg/kg													
1,1,1-Trichloroethane	12 U	11 U	12 U	12 U	11 U	12 U	10 U	12 U	12 U	11 U	11 U	13 U	11 U
1,1,2,2-Tetrachloroethane	12 U	11 U	12 U	12 U	11 U	12 U	10 U	12 U	12 U	11 U	11 U	13 U	11 U
1,1,2-Trichloroethane	12 U	11 U	12 U	12 U	11 U	12 U	10 U	12 U	12 U	11 U	11 U	13 U	11 U
1,1-Dichloroethane	12 U	11 U	12 U	12 U	11 U	12 U	10 U	12 U	12 U	11 U	11 U	13 U	11 U
1,1-Dichloroethene	12 U	11 U	12 U	12 U	11 U	12 U	10 U	12 U	12 U	11 U	11 U	13 U	11 U
1,2-Dichloroethane	12 U	11 U	12 U	12 U	11 U	12 U	10 U	12 U	12 U	11 U	11 U	13 U	11 U
1,2-Dichloroethene (total)	12 U	11 U	12 U	12 U	11 U	12 U	10 U	12 U	12 U	11 U	11 U	13 U	11 U
1,2-Dichloropropane	12 U	11 U	12 U	12 U	11 U	12 U	10 U	12 U	12 U	11 U	11 U	13 U	11 U
2-Butanone	12 U	11 U	12 U	12 U	11 U	12 U	10 U	12 U	12 U	11 U	11 U	13 U	11 U
2-Hexanone	12 U	11 U	12 U	12 U	11 U	12 U	10 U	12 U	12 U	11 U	11 U	13 U	11 U
4-Methyl-2-pentanone	12 U	11 U	12 U	12 U	11 U	12 U	10 U	12 U	12 U	11 U	11 U	13 U	11 U
Acetone	28	10 J	15	9 J	11 U	12 U	10 U	8 J	7 J	11 J	14	13 U	7 J
Benzene	12 U	11 U	12 U	12 U	11 U	12 U	10 U	12 U	12 U	11 U	11 U	13 U	11 U
Bromodichloromethane	12 U	11 U	12 U	12 U	11 U	12 U	10 U	12 U	12 U	11 U	11 U	13 U	11 U
Bromoform	12 U	11 U	12 U	12 U	11 U	12 U	10 U	12 U	12 U	11 U	11 U	13 U	11 U
Bromomethane	12 U	11 U	12 U	12 U	11 U	12 U	10 U	12 U	12 U	11 U	11 U	13 U	11 U
Carbon disulfide	12 U	11 U	12 U	12 U	11 U	12 U	10 U	12 U	12 U	11 U	11 U	13 U	11 U
Carbon tetrachloride	12 U	11 U	12 U	12 U	11 U	12 U	10 U	12 U	12 U	11 U	11 U	13 U	11 U
Chlorobenzene	12 U	11 U	12 U	12 U	11 U	12 U	10 U	12 U	12 U	11 U	11 U	13 U	11 U
Chloroethane	12 U	11 U	12 U	12 U	11 U	12 U	10 U	12 U	12 U	11 U	11 U	13 U	11 U
Chloroform	12 U	11 U	12 U	12 U	11 U	12 U	10 U	12 U	12 U	11 U	11 U	13 U	11 U
Chloromethane	12 U	11 U	12 U	12 U	11 U	12 U	10 U	12 U	12 U	11 U	11 U	13 U	11 U
cis-1,3-Dichloropropene	12 U	11 U	12 U	12 U	11 U	12 U	10 U	12 U	12 U	11 U	11 U	13 U	11 U
Dibromochloromethane	12 U	11 U	12 U	12 U	11 U	12 U	10 U	12 U	12 U	11 U	11 U	13 U	11 U
Ethylbenzene	12 U	11 U	12 U	12 U	11 U	12 U	10 U	12 U	12 U	11 U	11 U	13 U	11 U
Methylene chloride	12 U	11 U	12 U	12 U	11 U	12 U	10 U	12 U	12 U	11 U	11 U	13 U	11 U
Styrene	12 U	11 U	12 U	12 U	11 U	12 U	10 U	12 U	12 U	11 U	11 U	13 U	11 U
Tetrachloroethene	12 U	11 U	12 U	12 U	11 U	12 U	10 U	12 U	12 U	11 U	11 U	13 U	11 U
Toluene	12 U	11 U	12 U	12 U	11 U	12 U	10 U	12 U	12 U	11 U	11 U	13 U	11 U
trans-1,3-Dichloropropene	12 U	11 U	12 U	12 U	11 U	12 U	10 U	12 U	12 U	11 U	11 U	13 U	11 U
Trichloroethene	12 U	11 U	12 U	12 U	11 U	12 U	10 U	12 U	12 U	11 U	11 U	13 U	11 U
Vinyl chloride	12 U	11 U	12 U	12 U	11 U	12 U	10 U	12 U	12 U	11 U	11 U	13 U	11 U
Xylene (total)	12 U	11 U	12 U	12 U	11 U	12 U	53	12 U	12 U	11 U	11 U	13 U	11 U
Semivolatile organics, µg/kg													
1,2,4-Trichlorobenzene	390 U	370 U	390 U	390 U	360 U	400 U	350 U	400 U	360 U	390 U	380 U	420 U	360 U
1,2-Dichlorobenzene	390 U	370 U	390 U	390 U	360 U	400 U	350 U	400 U	360 U	390 U	380 U	420 U	360 U
1,3-Dichlorobenzene	390 U	370 U	390 U	390 U	360 U	400 U	350 U	400 U	360 U	390 U	380 U	420 U	360 U
1,4-Dichlorobenzene	390 U	370 U	390 U	390 U	360 U	400 U	350 U	400 U	360 U	390 U	380 U	420 U	360 U
2,2'-oxybis(1-Chloropropane)	390 U	370 U	390 U	390 U	360 U	400 U	350 U	400 U	360 U	390 U	380 U	420 U	360 U

Appendix C
Table C-1. Summary of Soil Analytical Results
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Sample ID	17B01401		17B01501		17B01601		17B01701		17B01801		17B01802		17B01901		17B01902		17B02001		17B02101		17B02101D		17B02201		17B02301	
Lab ID	G7678013		G7678010		G7678015		G7678014		G7415006		G7415004		G7427007		G7427008		G7415005		G7415003		G7415002		G7415007		G7678016	
Sampling Date	26-May-95		26-May-95		26-May-95		26-May-95		25-Apr-95		25-Apr-95		26-Apr-95		26-Apr-95		25-Apr-95		25-Apr-95		25-Apr-95		25-Apr-95		26-May-95	
2,4,5-Trichlorophenol	970	U	920	U	970	U	970	U	900	U	1000	U	880	U	1000	U	900	U	970	U	950	U	1000	U	900	U
2,4,6-Trichlorophenol	390	U	370	U	390	U	390	U	360	U	400	U	350	U	400	U	360	U	390	U	380	U	420	U	360	U
2,4-Dichlorophenol	390	U	370	U	390	U	390	U	360	U	400	U	350	U	400	U	360	U	390	U	380	U	420	U	360	U
2,4-Dimethylphenol	390	U	370	U	390	U	390	U	360	U	400	U	350	U	400	U	360	U	390	U	380	U	420	U	360	U
2,4-Dinitrophenol	970	U	920	U	970	U	970	U	900	U	1000	U	880	U	1000	U	900	U	970	U	950	U	1000	U	900	U
2,4-Dinitrotoluene	390	U	370	U	390	U	390	U	360	U	400	U	350	U	400	U	360	U	390	U	380	U	420	U	360	U
2,6-Dinitrotoluene	390	U	370	U	390	U	390	U	360	U	400	U	350	U	400	U	360	U	390	U	380	U	420	U	360	U
2-Chloronaphthalene	390	U	370	U	390	U	390	U	360	U	400	U	350	U	400	U	360	U	390	U	380	U	420	U	360	U
2-Chlorophenol	390	U	370	U	390	U	390	U	360	U	400	U	350	U	400	U	360	U	390	U	380	U	420	U	360	U
2-Methylnaphthalene	390	U	370	U	390	U	390	U	360	U	400	U	110	J	400	U	360	U	390	U	380	U	420	U	360	U
2-Methylphenol	390	U	370	U	390	U	390	U	360	U	400	U	350	U	400	U	360	U	390	U	380	U	420	U	360	U
2-Nitroaniline	970	U	920	U	970	U	970	U	900	U	1000	U	880	U	1000	U	900	U	970	U	950	U	1000	U	900	U
2-Nitrophenol	390	U	370	U	390	U	390	U	360	U	400	U	350	U	400	U	360	U	390	U	380	U	420	U	360	U
3,3'-Dichlorobenzidine	390	U	370	U	390	U	390	U	360	U	400	U	350	U	400	U	360	U	390	U	380	U	420	U	360	U
3-Nitroaniline	970	U	920	U	970	U	970	U	900	U	1000	U	880	U	1000	U	900	U	970	U	950	U	1000	U	900	U
4,6-Dinitro-2-methylphenol	970	U	920	U	970	U	970	U	900	U	1000	U	880	U	1000	U	900	U	970	U	950	U	1000	U	900	U
4-Bromophenyl-phenylether	390	U	370	U	390	U	390	U	360	U	400	U	350	U	400	U	360	U	390	U	380	U	420	U	360	U
4-Chloro-3-methylphenol	390	U	370	U	390	U	390	U	360	U	400	U	350	U	400	U	360	U	390	U	380	U	420	U	360	U
4-Chloroaniline	390	U	370	U	390	U	390	U	360	U	400	U	350	U	400	U	360	U	390	U	380	U	420	U	360	U
4-Chlorophenyl-phenylether	390	U	370	U	390	U	390	U	360	U	400	U	350	U	400	U	360	U	390	U	380	U	420	U	360	U
4-Methylphenol	390	U	370	U	390	U	390	U	360	U	400	U	350	U	400	U	360	U	390	U	380	U	420	U	360	U
4-Nitroaniline	970	U	920	U	970	U	970	U	900	U	1000	U	880	U	1000	U	900	U	970	U	950	U	1000	U	900	U
4-Nitrophenol	970	U	920	U	970	U	970	U	900	U	1000	U	880	U	1000	U	900	U	970	U	950	U	1000	U	900	U
Acenaphthene	390	U	370	U	410		390	U	360	U	400	U	350	U	400	U	360	U	390	U	380	U	420	U	150	J
Acenaphthylene	390	U	370	U	390	U	390	U	360	U	400	U	350	U	400	U	360	U	390	U	380	U	420	U	360	U
Anthracene	390	U	370	U	540		390	U	360	U	400	U	350	U	400	U	360	U	390	U	380	U	420	U	360	U
Benzo(a)anthracene	110	J	370	U	2600		390	U	360	U	400	U	350	U	400	U	360	U	390	U	380	U	420	U	240	J
Benzo(a)pyrene	390	U	370	U	420		390	U	360	U	400	U	350	U	400	U	360	U	390	U	380	U	420	U	360	U
Benzo(b)fluoranthene	390	U	370	U	2000		390	U	360	U	400	U	350	U	400	U	360	U	390	U	380	U	420	U	180	J
Benzo(g,h,i)perylene	390	U	370	U	390	U	390	U	360	U	400	U	350	U	400	U	360	U	390	U	380	U	420	U	360	U
Benzo(k)fluoranthene	390	U	370	U	1500		390	U	360	U	400	U	350	U	400	U	360	U	390	U	380	U	420	U	140	J
bis(2-Chloroethoxy)methane	390	U	370	U	390	U	390	U	360	U	400	U	350	U	400	U	360	U	390	U	380	U	420	U	360	U
bis(2-Chloroethyl)ether	390	U	370	U	390	U	390	U	360	U	400	U	350	U	400	U	360	U	390	U	380	U	420	U	360	U
bis(2-Ethylhexyl)phthalate	390	U	370	U	390	U	390	U	360	U	400	U	350	U	400	U	360	U	390	U	380	U	420	U	360	U
Butylbenzylphthalate	390	U	370	U	390	U	390	U	360	U	400	U	350	U	400	U	360	U	390	U	380	U	420	U	360	U
Carbazole	390	U	370	U	250	J	390	U	360	U	400	U	350	U	400	U	360	U	390	U	380	U	420	U	360	U
Chrysene	390	U	370	U	2000		390	U	360	U	400	U	350	U	400	U	360	U	390	U	380	U	420	U	210	J
Di-n-butylphthalate	390	U	370	U	390	U	390	U	360	U	400	U	350	U	400	U	360	U	390	U	380	U	420	U	360	U
Di-n-octylphthalate	390	U	370	U	390	U	390	U	360	U	400	U	350	U	400	U	360	U	390	U	380	U	420	U	360	U
Dibenz(a,h)anthracene	390	U	370	U	490		390	U	360	U	400	U	350	U	400	U	360	U	390	U	380	U	420	U	360	U

Appendix C
Table C-1. Summary of Soil Analytical Results
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Sample ID	17B01401	17B01501	17B01601	17B01701	17B01801	17B01802	17B01901	17B01902	17B02001	17B02101	17B02101D	17B02201	17B02301
Lab ID	G7678013	G7678010	G7678015	G7678014	G7415006	G7415004	G7427007	G7427008	G7415005	G7415003	G7415002	G7415007	G7678016
Sampling Date	26-May-95	26-May-95	26-May-95	26-May-95	25-Apr-95	25-Apr-95	26-Apr-95	26-Apr-95	25-Apr-95	25-Apr-95	25-Apr-95	25-Apr-95	26-May-95
Dibenzofuran	390 U	370 U	220 J	390 U	360 U	400 U	350 U	400 U	360 U	390 U	380 U	420 U	360 U
Diethylphthalate	390 U	370 U	390 U	390 U	360 U	400 U	350 U	400 U	360 U	390 U	380 U	420 U	360 U
Dimethylphthalate	390 U	370 U	390 U	390 U	360 U	400 U	350 U	400 U	360 U	390 U	380 U	420 U	360 U
Fluoranthene	190 J	370 U	4400 D	390 U	170 J	400 U	350 U	400 U	360 U	390 U	380 U	420 U	580
Fluorene	390 U	370 U	500	390 U	360 U	400 U	350 U	400 U	360 U	390 U	380 U	420 U	360 U
Hexachlorobenzene	390 U	370 U	390 U	390 U	360 U	400 U	350 U	400 U	360 U	390 U	380 U	420 U	360 U
Hexachlorobutadiene	390 U	370 U	390 U	390 U	360 U	400 U	350 U	400 U	360 U	390 U	380 U	420 U	360 U
Hexachlorocyclopentadiene	390 U	370 U	390 U	390 U	360 U	400 U	350 U	400 U	360 U	390 U	380 U	420 U	360 U
Hexachloroethane	390 U	370 U	390 U	390 U	360 U	400 U	350 U	400 U	360 U	390 U	380 U	420 U	360 U
Indeno(1,2,3-cd)pyrene	390 U	370 U	360 J	390 U	360 U	400 U	350 U	400 U	360 U	390 U	380 U	420 U	360 U
Isophorone	390 U	370 U	390 U	390 U	360 U	400 U	350 U	400 U	360 U	390 U	380 U	420 U	360 U
N-Nitroso-di-n-propylamine	390 U	370 U	390 U	390 U	360 U	400 U	350 U	400 U	360 U	390 U	380 U	420 U	360 U
N-Nitrosodiphenylamine (1)	390 U	370 U	390 U	390 U	360 U	400 U	350 U	400 U	360 U	390 U	380 U	420 U	360 U
Naphthalene	390 U	370 U	390 U	390 U	360 U	400 U	350 U	400 U	360 U	390 U	380 U	420 U	360 U
Nitrobenzene	390 U	370 U	390 U	390 U	360 U	400 U	350 U	400 U	360 U	390 U	380 U	420 U	360 U
Pentachlorophenol	970 U	920 U	970 U	970 U	900 U	1000 U	880 U	1000 U	900 U	970 U	950 U	1000 U	900 U
Phenanthrene	120 J	370 U	2600	390 U	110 J	400 U	350 U	400 U	360 U	390 U	380 U	420 U	290 J
Phenol	390 U	370 U	390 U	390 U	360 U	400 U	350 U	400 U	360 U	390 U	380 U	420 U	360 U
Pyrene	390 U	370 U	1200	390 U	110 J	400 U	350 U	400 U	360 U	390 U	380 U	420 U	120 J
Pesticides/PCBs, µg/kg													
4,4'-DDD	19 U	3.7 U	160	3.9 U	3.5 U	10 U	3.5 U	3.9 U	3.8 U	3.7 U	3.7 U	4.2 U	3.5 U
4,4'-DDE	19 U	3.6 J	55 NJ	1.9 J	3.5 U	10 U	4.5	3.9 U	3.8 U	3.7 U	3.7 U	4.2 U	8.7 J
4,4'-DDT	19 U	7.2	200 J	20	3.5 U	10 U	3.5 U	3.9 U	3.8 U	3.7 U	3.7 U	4.2 U	14 U
Aldrin	9.9 U	1.9 U	20 U	2 U	1.8 U	5.2 U	1.8 U	2 U	2 U	1.9 U	1.9 U	2.2 U	1.8 U
alpha-BHC	9.9 U	1.9 U	20 U	2 U	1.8 U	5.2 U	1.8 U	2 U	2 U	1.9 U	1.9 U	2.2 U	1.8 U
alpha-Chlordane	33	0.87 J	45	2.7	1.8 U	5.2 U	1.8 U	2 U	2 U	1.9 U	1.9 U	2.2 U	110 DJ
Aroclor-1016	190 U	37 U	390 U	39 U	35 U	100 U	35 U	39 U	38 U	37 U	37 U	42 U	35 U
Aroclor-1221	390 U	74 U	790 U	79 U	72 U	210 U	71 U	80 U	77 U	76 U	76 U	85 U	72 U
Aroclor-1232	190 U	37 U	390 U	39 U	35 U	100 U	35 U	39 U	38 U	37 U	37 U	42 U	35 U
Aroclor-1242	190 U	37 U	390 U	39 U	35 U	100 U	35 U	39 U	38 U	37 U	37 U	42 U	35 U
Aroclor-1248	190 U	37 U	390 U	39 U	35 U	100 U	35 U	39 U	38 U	37 U	37 U	42 U	35 U
Aroclor-1254	190 U	37 U	390 U	39 U	35 U	100 U	35 U	39 U	38 U	37 U	37 U	42 U	35 U
Aroclor-1260	190 U	37 U	390 U	39 U	35 U	100 U	35 U	39 U	38 U	37 U	37 U	42 U	35 U
beta-BHC	9.9 U	1.9 U	20 U	2 U	1.8 U	5.2 U	1.8 U	2 U	2 U	1.9 U	1.9 U	2.2 U	1.8 U
delta-BHC	9.9 U	1.9 U	20 U	2 U	1.8 U	5.2 U	1.8 U	2 U	2 U	1.9 U	1.9 U	2.2 U	1.8 U
Dieldrin	35	2.2 J	28 J	3.9 U	3.5 U	10 U	3.5 U	3.9 U	3.8 U	3.7 U	3.7 U	4.2 U	17
Endosulfan I	9.9 U	1.9 U	20 U	2 U	1.8 U	5.2 U	1.8 U	2 U	2 U	1.9 U	1.9 U	2.2 U	1.8 U
Endosulfan II	19 U	3.7 U	39 U	3.9 U	3.5 U	10 U	3.5 U	3.9 U	3.8 U	3.7 U	3.7 U	4.2 U	3.5 U
Endosulfan sulfate	19 U	3.7 U	39 U	3.9 U	3.5 U	10 U	3.5 U	3.9 U	3.8 U	3.7 U	3.7 U	4.2 U	3.5 U
Endrin	19 U	3.7 U	39 U	3.9 U	3.5 U	10 U	3.5 U	3.9 U	3.8 U	3.7 U	3.7 U	4.2 U	3.5 U

Appendix C
Table C-1. Summary of Soil Analytical Results
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Sample ID	17B01401		17B01501		17B01601		17B01701		17B01801		17B01802		17B01901		17B01902		17B02001		17B02101		17B02101D		17B02201		17B02301	
Lab ID	G7678013		G7678010		G7678015		G7678014		G7415006		G7415004		G7427007		G7427008		G7415005		G7415003		G7415002		G7415007		G7678016	
Sampling Date	26-May-95		26-May-95		26-May-95		26-May-95		25-Apr-95		25-Apr-95		26-Apr-95		26-Apr-95		25-Apr-95		25-Apr-95		25-Apr-95		25-Apr-95		26-May-95	
Endrin aldehyde	19	U	3.7	U	39	U	3.9	U	3.5	U	10	U	3.5	U	3.9	U	3.8	U	3.7	U	3.7	U	4.2	U	3.5	U
Endrin ketone	19	U	3.7	U	39	U	3.9	U	3.5	U	10	U	3.5	U	3.9	U	3.8	U	3.7	U	3.7	U	4.2	U	3.5	U
gamma-BHC (Lindane)	9.9	U	1.9	U	20	U	2	U	1.8	U	5.2	U	1.8	U	2	U	2	U	1.9	U	1.9	U	2.2	U	1.8	U
gamma-Chlordane	69		1.4	J	50	NJ	2.8		1.8	U	5.2	U	1.8	U	2	U	2	U	1.9	U	1.9	U	2.2	U	120	DJ
Heptachlor	9.9	U	1.9	U	20	U	2	U	1.8	U	5.2	U	1.8	U	2	U	2	U	1.9	U	1.9	U	2.2	U	7.8	
Heptachlor epoxide	9.9	U	1.9	U	20	U	2	U	1.8	U	5.2	U	1.8	U	2	U	2	U	1.9	U	1.9	U	2.2	U	1.8	U
Methoxychlor	99	U	19	U	200	U	20	U	18	U	52	U	18	U	20	U	20	U	19	U	19	U	22	U	18	U
Toxaphene	990	U	190	U	2000	U	200	U	180	U	520	U	180	U	200	U	200	U	190	U	190	U	220	U	180	U
Inorganics, mg/kg																										
Aluminum	849		367		2160		1870		5400	J	2140	J	538		6840		10500	J	4620	J	3000	J	1310	J	2280	
Antimony	6.9	U	6.7	U	6.9	U	6.9	U	6.4	U	7.1	U	6.3	U	7.2	U	6.8	U	6.6	U	6.4	U	7.6	U	6.3	U
Arsenic	1.4	B	0.98	J	2.2	B	1.7	B	0.65	BJ	0.69	B	0.4	U	0.74	U	1.3	B	0.58	B	0.76	B	0.49	U	2	J
Barium	1.2	B	1.1	B	9.5	B	3.6	B	6.6	BJ	4.1	BJ	0.57	B	9	B	10.6	J	6.1	BJ	4.1	BJ	3.6	BJ	6.6	B
Beryllium	0.02	U	0.02	U	0.09	B	0.06	B	0.08	B	0.02	U	0.03	U	0.11	U	0.03	B	0.03	B	0.02	U	0.03	B	0.02	B
Cadmium	0.72	U	0.7	U	0.73	U	0.72	U	0.67	U	0.74	U	0.66	U	0.75	U	0.72	U	0.69	U	0.67	U	0.8	U	0.66	U
Calcium	705	B	1010	B	77900		6880		3200	J	92.3	BJ	226	J	171	J	211	J	237	J	637	BJ	69.9	BJ	21400	
Chromium	1.5	B	0.93	B	6		2.5		5.2	J	2.2	BJ	0.79	B	5.4		6.7	J	4.1	J	2.5	J	1.5	BJ	5.1	
Cobalt	0.67	U	0.65	U	0.71	B	0.68	U	0.63	U	0.73	B	0.61	U	0.78	B	0.82		0.7	B	0.63	U	0.75	U	0.62	U
Copper	1.6	B	0.33	B	2.6	B	0.88	B	2.2	U	4.3	B	0.46	B	0.96	B	0.32	U	0.35	U	0.3	U	0.46	U	6.1	
Iron	260		188		691		1150		312	J	69.4	J	800	J	260	J	473	J	331	J	208	J	46.2	J	497	
Lead	0.99	J	0.43	J	9.7	J	1.4	J	6.6		2		0.8		3		5.7		1.7		1.8		1.6		23.6	J
Magnesium	38.7	B	23.3	B	636	B	92.6	B	66.6	J	15.3	BJ	11.7	B	55.3	B	87.9	J	68.2	J	45.1	BJ	12.6	BJ	190	B
Manganese	0.89	B	0.61	B	11.2		1.5	B	2.4	J	0.36	BJ	0.58	B	0.99	B	1.1	J	1.2	J	0.78	BJ	0.44	BJ	7.4	
Mercury	0.03	U	0.03	U	0.03	B	0.03	U	0.14		0.03	U	0.02	U	0.03	U	0.03	B	0.04	B	0.04	B	0.04	B	0.03	B
Nickel	3.3	U	3.2	U	3.3	U	3.3	U	3.1	U	3.4	U	3	U	3.4	U	5.1	B	3.2	U	3.1	U	3.7	U	3	U
Potassium	103	U	99.7	U	104	U	103	U	95.7	U	107	U	94	U	119	B	103	U	98.9	U	96.5	U	114	U	95	U
Selenium	0.53	U	0.51	U	0.54	U	0.7	B	0.49	U	0.55	UJ	0.49	UJ	0.56	UJ	0.53	U	0.51	U	0.5	U	0.59	UJ	0.49	U
Silver	0.6	U	0.58	U	0.61	U	0.61	U	57.5		1.7	U	0.55	U	0.63	U	0.6	U	0.64	U	0.57	U	0.67	U	0.56	U
Sodium	4.9	B	6.1	B	28.7	U	5.7	B	3.6	U	4.1	U	6.4	U	11.4	U	10.4	B	3.8	U	3.7	U	4.3	U	9.8	B
Thallium	0.42	U	0.41	U	0.42	U	0.42	U	0.39	UJ	0.43	U	0.74	B	0.45	U	0.42	U	0.4	U	0.39	U	0.47	U	0.39	U
Vanadium	1.6	B	1.1	B	9.6	B	5.5	B	2.1	B	1.7	B	1.2	B	5.5	B	8.1	B	3.5	B	2.6	B	0.64	U	3.7	B
Zinc	0.79	B	0.68	B	43.9		0.77	B	4	J	0.4	J	1.7	B	1	B	0.51	J	0.61	J	0.92	BJ	0.28	UJ	11.1	
General Chemistry, mg/kg																										
Total Petroleum Hydrocarbons	18.3		15.2		34.3		10		23.3		19.2		4.2	U	4.8	U	9.7		24.5		8.3		36.5		110	

Appendix C
Table C-1. Summary of Soil Analytical Results
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Sample ID	17B02301D		17B02302		17B02401		17B02402		17B02501		17B02502		17B03401		17B03501		17B03601		17B05601		17B06601	
Lab ID	G7678017		G7678018		G7678019		G7678020		G7679001		G7679002		G7679003		G7679004		G7679005		A8D170144001		A8D170144002	
Sampling Date	26-May-95		26-May-95		26-May-95		26-May-95		26-May-95		26-May-95		26-May-95		26-May-95		26-May-95		16-Apr-98		16-Apr-98	
Volatile organics, µg/kg																						
1,1,1-Trichloroethane	11	U	12	U	11	U	12	U	11	U	11	U	11	U	13	U	11	U	5.7	U	5.7	U
1,1,2,2-Tetrachloroethane	11	U	12	U	11	U	12	U	11	U	11	UJ	11	U	13	U	11	U	5.7	U	5.7	U
1,1,2-Trichloroethane	11	U	12	U	11	U	12	U	11	U	11	UJ	11	U	13	U	11	U	5.7	U	5.7	U
1,1-Dichloroethane	11	U	12	U	11	U	12	U	11	U	11	U	11	U	13	U	11	U	5.7	U	5.7	U
1,1-Dichloroethene	11	U	12	U	11	U	12	U	11	U	11	U	11	U	13	U	11	U	5.7	U	5.7	U
1,2-Dichloroethane	11	U	12	U	11	U	12	U	11	U	11	U	11	U	13	U	11	U	5.7	U	5.7	U
1,2-Dichloroethene (total)	11	U	12	U	11	U	12	U	11	U	11	U	11	U	13	U	11	U	5.7	U	5.7	U
1,2-Dichloropropane	11	U	12	U	11	U	12	U	11	U	11	U	11	U	13	U	11	U	5.7	U	5.7	U
2-Butanone	11	U	12	U	11	U	5	J	11	U	11	U	11	U	13	U	11	U	23	U	23	U
2-Hexanone	11	U	12	U	11	U	12	U	11	U	11	UJ	11	U	13	U	11	U	23	U	23	U
4-Methyl-2-pentanone	11	U	12	U	11	U	12	U	11	U	11	UJ	11	U	13	U	11	U	23	U	23	U
Acetone	11	U	17		11	U	53		9	J	11	U	11	U	13	J	8	J	23	U	23	U
Benzene	11	U	12	U	11	U	12	U	11	U	11	U	11	U	13	U	11	U	5.7	U	5.7	U
Bromodichloromethane	11	U	12	U	11	U	12	U	11	U	11	U	11	U	13	U	11	U	5.7	U	5.7	U
Bromoform	11	U	12	U	11	U	12	U	11	U	11	UJ	11	U	13	U	11	U	5.7	U	5.7	U
Bromomethane	11	U	12	U	11	U	12	U	11	U	11	U	11	U	13	U	11	U	11	U	11	U
Carbon disulfide	11	U	12	U	11	U	12	U	11	U	11	U	11	U	13	U	11	U	5.7	U	5.7	U
Carbon tetrachloride	11	U	12	U	11	U	12	U	11	U	11	U	11	U	13	U	11	U	5.7	U	5.7	U
Chlorobenzene	11	U	12	U	11	U	12	U	11	U	11	UJ	11	U	13	U	11	U	5.7	U	5.7	U
Chloroethane	11	U	12	U	11	U	12	U	11	U	11	U	11	U	13	U	11	U	11	U	11	U
Chloroform	11	U	12	U	11	U	12	U	11	U	11	U	11	U	13	U	11	U	5.7	U	5.7	U
Chloromethane	11	U	12	U	11	U	12	U	11	U	11	U	11	U	13	U	11	U	11	U	11	U
cis-1,3-Dichloropropene	11	U	12	U	11	U	12	U	11	U	11	UJ	11	U	13	U	11	U	5.7	U	5.7	U
Dibromochloromethane	11	U	12	U	11	U	12	U	11	U	11	UJ	11	U	13	U	11	U	5.7	U	5.7	U
Ethylbenzene	11	U	12	U	11	U	12	U	11	U	11	UJ	11	U	13	U	11	U	5.7	U	5.7	U
Methylene chloride	11	U	12	U	11	U	12	U	11	U	11	U	11	U	13	U	11	U	5.7	U	5.7	U
Styrene	11	U	12	U	11	U	12	U	11	U	11	UJ	11	U	13	U	11	U	5.7	U	5.7	U
Tetrachloroethene	11	U	12	U	11	U	12	U	11	U	11	U	11	U	13	U	11	U	5.7	U	5.7	U
Toluene	11	U	12	U	11	U	12	U	11	U	2	J	11	U	13	U	11	U	5.7	U	5.7	U
trans-1,3-Dichloropropene	11	U	12	U	11	U	12	U	11	U	11	UJ	11	U	13	U	11	U	5.7	U	5.7	U
Trichloroethene	11	U	12	U	11	U	12	U	11	U	11	UJ	11	U	13	U	11	U	5.7	U	5.7	U
Vinyl chloride	11	U	12	U	11	U	12	U	11	U	11	U	11	U	13	U	11	U	11	U	11	U
Xylene (total)	11	U	12	U	11	U	12	U	11	U	11	UJ	11	U	13	U	11	U	5.7	U	5.7	U
Semivolatile organics, µg/kg																						
1,2,4-Trichlorobenzene	360	U	390	U	370	U	390	U	380	U	370	U	360	U	440	U	350	U	NA		NA	
1,2-Dichlorobenzene	360	U	390	U	370	U	390	U	380	U	370	U	360	U	440	U	350	U	NA		NA	
1,3-Dichlorobenzene	360	U	390	U	370	U	390	U	380	U	370	U	360	U	440	U	350	U	NA		NA	
1,4-Dichlorobenzene	360	U	390	U	370	U	390	U	380	U	370	U	360	U	440	U	350	U	NA		NA	
2,2'-oxybis(1-Chloropropane)	360	U	390	U	370	U	390	U	380	U	370	U	360	U	440	U	350	U	NA		NA	

Appendix C
Table C-1. Summary of Soil Analytical Results
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Sample ID	17B02301D	17B02302	17B02401	17B02402	17B02501	17B02502	17B03401	17B03501	17B03601	17B05601	17B06601
Lab ID	G7678017	G7678018	G7678019	G7678020	G7679001	G7679002	G7679003	G7679004	G7679005	A8D170144001	A8D170144002
Sampling Date	26-May-95	26-May-95	26-May-95	26-May-95	26-May-95	26-May-95	26-May-95	26-May-95	26-May-95	16-Apr-98	16-Apr-98
2,4,5-Trichlorophenol	900 U	970 U	920 U	980 U	950 U	920 U	900 U	1100 U	880 U	NA	NA
2,4,6-Trichlorophenol	360 U	390 U	370 U	390 U	380 U	370 U	360 U	440 U	350 U	NA	NA
2,4-Dichlorophenol	360 U	390 U	370 U	390 U	380 U	370 U	360 U	440 U	350 U	NA	NA
2,4-Dimethylphenol	360 U	390 U	370 U	390 U	380 U	370 U	360 U	440 U	350 U	NA	NA
2,4-Dinitrophenol	900 U	970 U	920 U	980 U	950 U	920 U	900 U	1100 U	880 U	NA	NA
2,4-Dinitrotoluene	360 U	390 U	370 U	390 U	380 U	370 U	360 U	440 U	350 U	NA	NA
2,6-Dinitrotoluene	360 U	390 U	370 U	390 U	380 U	370 U	360 U	440 U	350 U	NA	NA
2-Chloronaphthalene	360 U	390 U	370 U	390 U	380 U	370 U	360 U	440 U	350 U	NA	NA
2-Chlorophenol	360 U	390 U	370 U	390 U	380 U	370 U	360 U	440 U	350 U	NA	NA
2-Methylnaphthalene	360 U	390 U	370 U	390 U	380 U	370 U	360 U	140 J	350 U	NA	NA
2-Methylphenol	360 U	390 U	370 U	390 U	380 U	370 U	360 U	440 U	350 U	NA	NA
2-Nitroaniline	900 U	970 U	920 U	980 U	950 U	920 U	900 U	1100 U	880 U	NA	NA
2-Nitrophenol	360 U	390 U	370 U	390 U	380 U	370 U	360 U	440 U	350 U	NA	NA
3,3'-Dichlorobenzidine	360 U	390 U	370 U	390 U	380 U	370 U	360 U	440 U	350 U	NA	NA
3-Nitroaniline	900 U	970 U	920 U	980 U	950 U	920 U	900 U	1100 U	880 U	NA	NA
4,6-Dinitro-2-methylphenol	900 U	970 U	920 U	980 U	950 U	920 U	900 U	1100 U	880 U	NA	NA
4-Bromophenyl-phenylether	360 U	390 U	370 U	390 U	380 U	370 U	360 U	440 U	350 U	NA	NA
4-Chloro-3-methylphenol	360 U	390 U	370 U	390 U	380 U	370 U	360 U	440 U	350 U	NA	NA
4-Chloroaniline	360 U	390 U	370 U	390 U	380 U	370 U	360 U	440 U	350 U	NA	NA
4-Chlorophenyl-phenylether	360 U	390 U	370 U	390 U	380 U	370 U	360 U	440 U	350 U	NA	NA
4-Methylphenol	360 U	390 U	370 U	390 U	380 U	370 U	360 U	440 U	350 U	NA	NA
4-Nitroaniline	900 U	970 U	920 U	980 U	950 U	920 U	900 U	1100 U	880 U	NA	NA
4-Nitrophenol	900 U	970 U	920 U	980 U	950 U	920 U	900 U	1100 U	880 U	NA	NA
Acenaphthene	360 U	390 U	370 U	390 U	380 U	370 U	360 U	1500	350 U	NA	NA
Acenaphthylene	360 U	390 U	370 U	390 U	380 U	370 U	360 U	440 U	350 U	NA	NA
Anthracene	360 U	390 U	370 U	390 U	380 U	370 U	360 U	2600	90 J	NA	NA
Benzo(a)anthracene	360 U	390 U	370 U	390 U	380 U	170 J	360 U	9000 D	340 J	NA	NA
Benzo(a)pyrene	360 U	390 U	370 U	390 U	380 U	170 J	360 U	8100 D	300 J	NA	NA
Benzo(b)fluoranthene	360 U	390 U	370 U	390 U	380 U	220 J	360 U	7200 D	320 J	NA	NA
Benzo(g,h,i)perylene	360 U	390 U	370 U	390 U	380 U	130 J	360 U	6400 D	220 J	NA	NA
Benzo(k)fluoranthene	360 U	390 U	370 U	390 U	380 U	130 J	360 U	2400	250 J	NA	NA
bis(2-Chloroethoxy)methane	360 U	390 U	370 U	390 U	380 U	370 U	360 U	440 U	350 U	NA	NA
bis(2-Chloroethyl)ether	360 U	390 U	370 U	390 U	380 U	370 U	360 U	440 U	350 U	NA	NA
bis(2-Ethylhexyl)phthalate	360 U	390 U	370 U	390 U	380 U	370 U	360 U	440 U	350 U	NA	NA
Butylbenzylphthalate	360 U	390 U	370 U	390 U	380 U	370 U	360 U	440 U	460	NA	NA
Carbazole	360 U	390 U	370 U	390 U	380 U	370 U	360 U	1700	350 U	NA	NA
Chrysene	360 U	390 U	370 U	390 U	380 U	190 J	360 U	9300 D	380	NA	NA
Di-n-butylphthalate	360 U	390 U	370 U	390 U	380 U	370 U	360 U	440 U	350 U	NA	NA
Di-n-octylphthalate	360 U	390 U	370 U	390 U	380 U	370 U	360 U	440 U	350 U	NA	NA
Dibenz(a,h)anthracene	360 U	390 U	370 U	390 U	380 U	370 U	360 U	2500	98 J	NA	NA

Appendix C
Table C-1. Summary of Soil Analytical Results
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Sample ID	17B02301D	17B02302	17B02401	17B02402	17B02501	17B02502	17B03401	17B03501	17B03601	17B05601	17B06601
Lab ID	G7678017	G7678018	G7678019	G7678020	G7679001	G7679002	G7679003	G7679004	G7679005	A8D170144001	A8D170144002
Sampling Date	26-May-95	26-May-95	26-May-95	26-May-95	26-May-95	26-May-95	26-May-95	26-May-95	26-May-95	16-Apr-98	16-Apr-98
Dibenzofuran	360 U	390 U	370 U	390 U	380 U	370 U	360 U	630	350 U	NA	NA
Diethylphthalate	360 U	390 U	370 U	390 U	380 U	370 U	360 U	440 U	350 U	NA	NA
Dimethylphthalate	360 U	390 U	370 U	390 U	380 U	370 U	360 U	440 U	350 U	NA	NA
Fluoranthene	360 U	390 U	370 U	390 U	380 U	310 J	360 U	13000 D	710	NA	NA
Fluorene	360 U	390 U	370 U	390 U	380 U	370 U	360 U	1400	350 U	NA	NA
Hexachlorobenzene	360 U	390 U	370 U	390 U	380 U	370 U	360 U	440 U	350 U	NA	NA
Hexachlorobutadiene	360 U	390 U	370 U	390 U	380 U	370 U	360 U	440 U	350 U	NA	NA
Hexachlorocyclopentadiene	360 U	390 U	370 U	390 U	380 U	370 U	360 U	440 U	350 U	NA	NA
Hexachloroethane	360 U	390 U	370 U	390 U	380 U	370 U	360 U	440 U	350 U	NA	NA
Indeno(1,2,3-cd)pyrene	360 U	390 U	370 U	390 U	380 U	110 J	360 U	5900 D	170 J	NA	NA
Isophorone	360 U	390 U	370 U	390 U	380 U	370 U	360 U	440 U	350 U	NA	NA
N-Nitroso-di-n-propylamine	360 U	390 U	370 U	390 U	380 U	370 U	360 U	440 U	350 U	NA	NA
N-Nitrosodiphenylamine (1)	360 U	390 U	370 U	390 U	380 U	370 U	360 U	440 U	350 U	NA	NA
Naphthalene	360 U	390 U	370 U	390 U	380 U	370 U	360 U	210 J	350 U	NA	NA
Nitrobenzene	360 U	390 U	370 U	390 U	380 U	370 U	360 U	440 U	350 U	NA	NA
Pentachlorophenol	900 U	970 U	920 U	980 U	950 U	920 U	900 U	1100 U	880 U	NA	NA
Phenanthrene	360 U	390 U	370 U	390 U	380 U	370 U	360 U	11000 D	440	NA	NA
Phenol	360 U	390 U	370 U	390 U	380 U	370 U	360 U	440 U	350 U	NA	NA
Pyrene	360 U	390 U	370 U	390 U	380 U	250 J	360 U	16000 D	640	NA	NA
Pesticides/PCBs, µg/kg											
4,4'-DDD	3.5 U	3.8 U	3.7 U	3.8 U	3.7 U	19 U	3.7 U	2600 C	8.4	NA	NA
4,4'-DDE	7.9 J	3.8 U	6.5 J	3.8 U	3.7 U	10 J	3.7 U	430	5.8 J	NA	NA
4,4'-DDT	7 U	3.8 U	12 J	3.8 U	3.7 U	21 J	3.7 U	1700 C	13	NA	NA
Aldrin	1.8 U	2 U	1.9 U	2 U	1.9 U	9.6 U	1.9 U	110 U	3.7 U	NA	NA
alpha-BHC	1.8 U	2 U	1.9 U	2 U	1.9 U	9.6 U	1.9 U	110 U	3.7 U	NA	NA
alpha-Chlordane	95 D	6.8	7.1	2 U	1.9 U	12 P	1.9 U	260	3.6 J	NA	NA
Aroclor-1016	35 U	38 U	37 U	38 U	37 U	190 U	37 U	2200 U	73 U	NA	NA
Aroclor-1221	72 U	77 U	75 U	78 U	76 U	380 U	74 U	4500 U	150 U	NA	NA
Aroclor-1232	35 U	38 U	37 U	38 U	37 U	190 U	37 U	2200 U	73 U	NA	NA
Aroclor-1242	35 U	38 U	37 U	38 U	37 U	190 U	37 U	2200 U	73 U	NA	NA
Aroclor-1248	35 U	38 U	37 U	38 U	37 U	190 U	37 U	2200 U	73 U	NA	NA
Aroclor-1254	35 U	38 U	37 U	38 U	37 U	190 U	37 U	2200 U	73 U	NA	NA
Aroclor-1260	35 U	38 U	37 U	38 U	37 U	190 U	37 U	2200 U	73 U	NA	NA
beta-BHC	1.8 U	2 U	1.9 U	2 U	1.9 U	9.6 U	1.9 U	110 U	3.7 U	NA	NA
delta-BHC	1.8 U	2 U	1.9 U	2 U	1.9 U	9.6 U	1.9 U	110 U	3.7 U	NA	NA
Dieldrin	18	3.8 U	2.3 J	3.8 U	3.7 U	12 J	3.7 U	220 U	5.1 J	NA	NA
Endosulfan I	1.8 U	2 U	1.9 U	2 U	1.9 U	9.6 U	1.9 U	110 U	3.7 U	NA	NA
Endosulfan II	3.5 U	3.8 U	3.7 U	3.8 U	3.7 U	19 U	3.7 U	220 U	7.3 U	NA	NA
Endosulfan sulfate	3.5 U	3.8 U	3.7 U	3.8 U	3.7 U	19 U	3.7 U	220 U	7.3 U	NA	NA
Endrin	3.5 U	3.8 U	3.7 U	3.8 U	3.7 U	19 U	3.7 U	220 U	7.3 U	NA	NA

Appendix C
Table C-1. Summary of Soil Analytical Results
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Sample ID	17B02301D	17B02302	17B02401	17B02402	17B02501	17B02502	17B03401	17B03501	17B03601	17B05601	17B06601
Lab ID	G7678017	G7678018	G7678019	G7678020	G7679001	G7679002	G7679003	G7679004	G7679005	A8D170144001	A8D170144002
Sampling Date	26-May-95	26-May-95	26-May-95	26-May-95	26-May-95	26-May-95	26-May-95	26-May-95	26-May-95	16-Apr-98	16-Apr-98
Endrin aldehyde	3.5 U	3.8 U	3.7 U	3.8 U	3.7 U	19 U	3.7 U	220 U	7.3 U	NA	NA
Endrin ketone	3.5 U	3.8 U	3.7 U	3.8 U	3.7 U	19 U	3.7 U	220 U	7.3 U	NA	NA
gamma-BHC (Lindane)	1.8 U	2 U	1.9 U	2 U	1.9 U	9.6 U	1.9 U	110 U	3.7 U	NA	NA
gamma-Chlordane	100 D	7	5.8 J	2 U	1.9 U	14	1.9 U	320	4.6	NA	NA
Heptachlor	8.9	2 U	1.9 U	2 U	1.9 U	9.6 U	1.9 U	110 U	3.7 U	NA	NA
Heptachlor epoxide	1.8 U	2 U	3.7 U	2 U	1.9 U	9.6 U	1.9 U	110 U	3.7 U	NA	NA
Methoxychlor	18 U	20 U	19 U	20 U	19 U	96 U	19 U	1100 U	37 U	NA	NA
Toxaphene	180 U	200 U	190 U	200 U	190 U	960 U	190 U	11000 U	370 U	NA	NA
Inorganics, mg/kg											
Aluminum	2460	2680	1040	5270	1550 J	1640 J	1200 J	1580 J	1980 J	NA	NA
Antimony	6.3 U	6.8 U	6.6 U	6.9 U	6.7 U	6.6 U	6.4 U	7.7 U	6.4 U	NA	NA
Arsenic	0.73 B	1.4 B	1.4 B	1 B	0.43 U	0.57 B	0.53 B	0.68 B	0.46 B	NA	NA
Barium	7.3 B	6.6 B	7.5 B	12 B	3.3 B	8 B	5.2 B	16.3 B	6.1 B	NA	NA
Beryllium	0.02 B	0.06 B	0.1 B	0.06 B	0.02 U	0.08 U	0.06 U	0.15 B	0.05 U	NA	NA
Cadmium	0.66 U	0.72 U	1.3	0.72 U	0.7 U	0.69 U	0.67 U	0.81 U	0.68 U	NA	NA
Calcium	19600	3380	235000	376 B	629 B	15100	3910	88200	5270	NA	NA
Chromium	6.2	2.7	7.7	4.7	1.8 B	2.1 B	1.6 B	22.7	2.8	NA	NA
Cobalt	0.62 U	0.67 U	0.93 B	0.77 B	0.65 U	0.65 U	0.63 U	0.76 U	0.63 U	NA	NA
Copper	5 B	1.6 B	9	0.41 B	0.5 U	2.7 U	1 U	7.9	2.1 U	NA	NA
Iron	477	314	632	817	236 J	710 J	332 J	10400 J	563 J	NA	NA
Lead	25.4 J	11.7 J	39.7 J	6.4 J	0.9 J	7.4 J	3.6 J	50.2 J	16.5 J	NA	NA
Magnesium	179 B	81.4 B	1700	23 B	51.4 B	210 B	96.6 B	1020 B	80.6 B	NA	NA
Manganese	8.4	2.4 B	18.8	4	1.1 B	5	5.5	47.7	2.6 B	NA	NA
Mercury	0.03 B	0.03 U	0.07	0.03 B	0.03 U	0.03 U	0.02 U	0.08	0.03 B	NA	NA
Nickel	3 U	3.3 U	3.2 U	3.3 U	3.2 U	3.2 U	3.1 U	3.7 U	3.1 U	NA	NA
Potassium	95.1 U	102 U	98.9 U	103 U	99.9 U	98.8 U	96.1 U	116 U	96.6 U	NA	NA
Selenium	0.49 U	0.53 U	0.51 UJ	0.53 U	0.52 U	0.51 U	0.5 U	0.6 UJ	0.5 U	NA	NA
Silver	0.56 U	0.6 U	0.58 U	0.6 U	0.59 U	0.58 U	0.56 U	0.68 U	0.57 U	NA	NA
Sodium	10.2 B	7.5 B	75 B	5.9 B	15.5 U	15.1 U	8.2 U	47.7 B	11.6 U	NA	NA
Thallium	0.39 U	0.42 U	0.4 U	0.42 U	0.41 U	0.4 U	0.39 U	0.47 U	0.39 U	NA	NA
Vanadium	3.4 B	2.7 B	15.4	4.5 B	2.5 B	3.1 B	3.1 B	8.4 B	4.8 B	NA	NA
Zinc	15.4	2.6 B	20.1	0.71 B	0.89 B	5.2	2.7 B	32.7	6.2	NA	NA
General Chemistry, mg/kg											
Total Petroleum Hydrocarbons	95.3	26.6	28.3	4.6 U	28.5	39.6	57.8	98.5	9.4	NA	NA

TABLE C-2

SUMMARY OF SUBSURFACE SOIL ANALYTICAL RESULTS, PAH CONFIRMATION SAMPLES

Appendix C
Table C-2. Summary of Soil Analytical Results, PAH Confirmation Samples
Study Area 17

Naval Training Center, Orlando
Orlando, FL

SampleID	17B04801		17B04901		17B04901D		17B05001		17B05101		17B05201		17B05301		17B05401		17S04801		17S04901	
LabID	A7K260160007		A7K220128004		A7K220128005		A7K220128008		A7K260160005		A7K260160006		A7K250140002		A7K250138014		A7K220128001		A7K220128003	
Sampling Date	11/25/97		11/21/97		11/21/97		11/21/97		11/25/97		11/25/97		11/24/97		11/24/97		11/21/97		11/21/97	
1-Methylnaphthalene	38	U	38	U	38	U	38	U	39	U	39	U	41	U	200	U	350	U	37	U
2-Methylnaphthalene	38	U	38	U	38	U	38	U	39	U	39	U	41	U	200	U	350	U	37	U
Acenaphthene	38	U	38	U	38	U	42		39	U	39	U	41	U	200	U	350	U	38	
Acenaphthylene	38	U	38	U	38	U	38	U	39	U	39	U	41	U	200	U	350	U	37	U
Anthracene	38	U	38	U	38	U	38	U	39	U	39	U	41	U	200	U	350	U	37	U
Benzo(a)anthracene	3.8	U	3.7	U	3.7	U	27		7.4	PF	3.8	U	12		32		35	U	3.8	PF
Benzo(a)pyrene	3.8	U	3.7	U	3.7	U	26		12		3.8	U	23		29		35	U	8.2	
Benzo(b)fluoranthene	3.8	U	3.7	U	3.7	U	54		12		3.8	U	42		34		35	U	9.7	
Benzo(ghi)perylene	3.8	U	3.7	U	3.7	U	56		7.8		3.8	U	44		43		35	U	11	
Benzo(k)fluoranthene	2	U	1.9	U	1.9	U	13	PF	6.2		2	U	18		15		18	U	4.5	
Chrysene	3.8	U	3.7	U	3.7	U	42		13		3.8	U	22		29		35	U	12	
Dibenz(a,h)anthracene	3.8	U	3.7	U	3.7	U	3.8	U	5.7		3.8	U	9.8	PF	19	U	35	U	3.7	U
Fluoranthene	3.8	U	3.7	U	3.7	U	64		3.8	U	3.8	U	22		35		35	U	17	
Fluorene	38	U	38	U	38	U	38	U	39	U	39	U	41	U	200	U	350	U	37	U
Indeno(1,2,3-cd)pyrene	3.8	U	3.7	U	3.7	U	3.8	U	7.8		3.8	U	20	PF	19	U	35	U	3.7	U
Naphthalene	38	U	38	U	38	U	39		39	U	39	U	41	U	200	U	350	U	37	U
Phenanthrene	38	U	38	U	38	U	38	U	39	U	39	U	41	U	200	U	350	U	37	U
Pyrene	21		3.7	U	3.7	U	74		30		3.8	U	24		52		56		23	

Appendix C
Table C-2. Summary of Soil Analytical Results, PAH Confirmation Samples
Study Area 17

Naval Training Center, Orlando
Orlando, FL

SampleID	17S05001		17S05001D		17S05101		17S05201		17S05301		17S05401		17S05501		17S05601		17S05701		17S05801		17S05901	
LabID	A7K220128006		A7K220128007		A7K220128009		A7K220128011		A7K250140001		A7K250138013											
Sampling Date	11/21/97		11/21/97		11/21/97		11/21/97		11/24/97		11/24/97		11/17/98		11/17/98		11/17/98		11/17/98		11/17/98	
1-Methylnaphthalene	1800	U	1800	U	75000	U	370	U	90	U	190	U	100	U	1100	U	8200	U	110	U	1200	U
2-Methylnaphthalene	1800	U	1800	U	75000	U	370	U	90	U	190	U	100	U	1100	U	8200	U	110	U	1200	U
Acenaphthene	1800	U	3000		190000		1200		260		770		100	U	1100	U	8200	U	110	U	1200	U
Acenaphthylene	1800	U	1800	U	75000	U	370	U	90	U	190	U	100	U	1100	U	8200	U	110	U	1200	U
Anthracene	1800	U	1800	U	75000	U	370	U	90	U	190	U	100	U	1100	U	8200	U	110	U	1200	U
Benzo(a)anthracene	1700		980		57000		410		83		270		5.1	U	330		2200		14		210	
Benzo(a)pyrene	1700		1100		48000		420		120		62	PF	5.1	U	430		2500		55		580	
Benzo(b)fluoranthene	1700		1200		47000		500		140		270		5.1	U	430		2200		24		610	
Benzo(ghi)perylene	1000		1000		24000		400		110		19	U	10	U	330		1600		36		610	
Benzo(k)fluoranthene	820		510		21000		240		57		67	PF	1.7	U	220		1200		17		300	
Chrysene	1600		930		50000		390		100		250		5.1	U	340		2100		16		240	
Dibenz(a,h)anthracene	270	PF	180	U	7900	PF	54	PF	26	PF	57	PF	5.1	U	55	U	410	U	5.7	U	58	U
Fluoranthene	3700		2100		160000		900		210		530		10	U	780		6000		15		230	
Fluorene	1800	U	1800	U	75000	U	370	U	90	U	190	U	100	U	1100	U	8200	U	110	U	1200	U
Indeno(1,2,3-cd)pyrene	280	PF	180	U	7400	U	360		58		35	PF	5.1	U	290		410	U	5.7	U	570	
Naphthalene	1800	U	1800	U	75000	U	370	U	98		190	U	100	U	1100	U	8200	U	110	U	1200	U
Phenanthrene	3300	PF	1800	U	120000		370	U	90	U	390		100	U	1100	U	8200	U	110	U	1200	U
Pyrene	3900		1800		100000		630		160		630		5.1	U	550		4300		17		370	

Appendix C
Table C-2. Summary of Soil Analytical Results, PAH Confirmation Samples
Study Area 17

Naval Training Center, Orlando
Orlando, FL

SampleID	17S06001		17S06101		17S06201		17S06301		17S06401		17S06401D		17S06501		17S06601	
LabID																
Sampling Date	11/17/98		11/17/98		11/17/98		11/17/98		11/17/98		11/17/98		11/17/98		11/17/98	
1-Methylnaphthalene	140	U	27000	U	11000	U	53000	U	21000	U	160000	U	1100	U	120	U
2-Methylnaphthalene	140	U	27000	U	11000	U	53000	U	21000	U	160000	U	1100	U	120	U
Acenaphthene	140	U	27000	U	11000	U	53000	U	21000	U	160000	U	1100	U	120	U
Acenaphthylene	140	U	27000	U	11000	U	53000	U	21000	U	160000	U	1100	U	120	U
Anthracene	140	U	27000	U	11000	U	53000	U	21000	U	160000	U	1100	U	120	U
Benzo(a)anthracene	7	U	10000		3000		16000		6700		34000		170		6	U
Benzo(a)pyrene	28		14000		4000		20000		6600		29000		240		13	
Benzo(b)fluoranthene	17		12000		3700		20000		7400		32000		270		7.9	
Benzo(ghi)perylene	15		8700		2700		13000		4100		18000		220		12	U
Benzo(k)fluoranthene	7.1		6100		1900		9500		3400		16000		140		4.5	
Chrysene	8.3		11000		3100		17000		6700		33000		200		6	U
Dibenz(a,h)anthracene	7	U	1300	U	550	U	2700	U	1100	U	7900	U	55	U	6	U
Fluoranthene	14	U	27000		7400		46000		19000		100000		400		12	U
Fluorene	140	U	2700	U	11000	U	5300	U	21000	U	16000	U	1100	U	120	U
Indeno(1,2,3-cd)pyrene	7	U	7700		550	U	12000		4100		17000		55	U	6.9	
Naphthalene	140	U	27000	U	11000	U	53000	U	21000	U	160000	U	1100	U	120	U
Phenanthrene	140	U	27000	U	11000	U	53000	U	21000	U	160000	U	1100	U	120	U
Pyrene	13		19000		5100		29000		12000		68000		280		6.9	

TABLE C-3

SUMMARY OF GROUNDWATER ANALYTICAL RESULTS

Appendix C
Table C-3.1. Summary of Groundwater Analytical Results, Initial Screening
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Sample ID	17G00101		17G00201		17G00301		17G00401		17G00501		17G00501D		17G02401	
Lab ID	G7716001		G7716002		G7716003		G7716004		G7716005		G7716006		G7731005	
Sampling Date	31-May-95		31-May-95		31-May-95		31-May-95		31-May-95		31-May-95		2-Jun-95	
Volatile organics, µg/L														
1,1,1-Trichloroethane	1	U	1	U	1	U	10	U	1	U	1	U	1	U
1,1,2,2-Tetrachloroethane	1	U	1	U	1	U	10	U	1	U	1	U	1	U
1,1,2-Trichloroethane	1	U	1	U	1	U	10	U	1	U	1	U	1	U
1,1-Dichloroethane	1	U	1	U	1	U	10	U	1	U	1	U	1	U
1,1-Dichloroethene	1	U	1	U	1	U	3	J	1	U	1	U	1	U
1,2-Dibromo-3-chloropropane	1	UR	1	UR	1	UR	10	UR	1	UR	1	UR	1	U
1,2-Dibromoethane	1	U	1	U	1	U	10	U	1	U	1	U	1	U
1,2-Dichloroethane	1	U	1	U	1	U	10	U	1	U	1	U	1	U
1,2-Dichloropropane	1	U	1	U	1	U	10	U	1	U	1	U	1	U
2-Butanone	5	UR	5	UR	5	UR	50	UR	5	UR	5	UR	5	UR
2-Hexanone	5	UJ	5	UJ	5	UJ	50	UJ	5	UJ	5	UJ	5	U
4-Methyl-2-pentanone	5	U	5	U	5	U	50	U	5	U	5	U	5	U
Acetone	5	UR	4	UR	5	UR	50	UR	5	UR	5	UR	2	UR
Benzene	1	U	1	U	1	U	10	U	1	U	1	U	1	U
Bromochloromethane	1	U	1	U	1	U	10	U	1	U	1	U	1	U
Bromodichloromethane	1	U	1	U	1	U	10	U	1	U	1	U	1	U
Bromoform	1	U	1	U	1	U	10	U	1	U	1	U	1	U
Bromomethane	1	U	1	U	1	U	10	U	1	U	1	U	1	U
Carbon disulfide	1	U	1	U	1	U	10	U	1		1	U	1	U
Carbon tetrachloride	1	U	1	U	1	U	10	U	1	U	1	U	1	U
Chlorobenzene	1	U	1	U	1	U	10	U	1	U	1	U	1	U
Chloroethane	1	U	1	U	1	U	10	U	1	U	1	U	1	U
Chloroform	1	U	5		1	U	10	U	1	U	1	U	1	U
Chloromethane	1	U	1	U	1	U	10	U	1	U	1	U	1	U
cis-1,2-Dichloroethene	1	U	1	U	1	U	200		1	U	1	U	1	U
cis-1,3-Dichloropropene	1	U	1	U	1	U	10	U	1	U	1	U	1	U
Dibromochloromethane	1	U	1	U	1	U	10	U	1	U	1	U	1	U
Ethylbenzene	1	U	1	U	1	U	10	U	1	U	1	U	1	U
Methylene chloride	2	U	2	U	2	U	20	U	2	U	2	U	2	U
Styrene	1	U	1	U	1	U	10	U	1	U	1	U	1	U
Tetrachloroethene	0.4	J	1	U	1	U	10	U	1	U	1	U	1	U
Toluene	1	U	1	U	1	U	10	U	1	U	1	U	1	U

Appendix C
Table C-3.1. Summary of Groundwater Analytical Results, Initial Screening
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Sample ID	17G00101		17G00201		17G00301		17G00401		17G00501		17G00501D		17G02401	
Lab ID	G7716001		G7716002		G7716003		G7716004		G7716005		G7716006		G7731005	
Sampling Date	31-May-95		31-May-95		31-May-95		31-May-95		31-May-95		31-May-95		2-Jun-95	
trans-1,2-Dichloroethene	1	U	1	U	1	U	5	J	1	U	1	U	1	U
trans-1,3-Dichloropropene	1	U	1	U	1	U	10	U	1	U	1	U	1	U
Trichloroethene	1	U	1	U	1	U	42		1	U	1	U	1	U
Vinyl chloride	1	U	1	U	1	U	190		1	U	1	U	1	U
Xylene (total)	1	U	1	U	1	U	10	U	1	U	1	U	1	U
Semivolatile organics, µg/L														
1,2,4-Trichlorobenzene	10	U	10	U	10	U	10	U	10	U	10	U	10	U
1,2-Dichlorobenzene	1	U	1	U	1	U	1	U	1	U	1	U	1	U
1,3-Dichlorobenzene	1	U	1	U	1	U	1	U	1	U	1	U	1	U
1,4-Dichlorobenzene	1	U	1	U	1	U	1	U	1	U	1	U	1	U
2,2'-oxybis(1-Chloropropane)	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2,4,5-Trichlorophenol	25	U	25	U	25	U	25	U	25	U	25	U	25	U
2,4,6-Trichlorophenol	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2,4-Dichlorophenol	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2,4-Dimethylphenol	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2,4-Dinitrophenol	25	UJ	25	UJ	25	UJ	25	U	25	UJ	25	UJ	25	UJ
2,4-Dinitrotoluene	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2,6-Dinitrotoluene	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2-Chloronaphthalene	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2-Chlorophenol	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2-Methylnaphthalene	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2-Methylphenol	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2-Nitroaniline	25	U	25	U	25	U	25	U	25	U	25	U	25	U
2-Nitrophenol	10	U	10	U	10	U	10	U	10	U	10	U	10	U
3,3'-Dichlorobenzidine	10	U	10	U	10	U	10	U	10	U	10	U	10	U
3-Nitroaniline	25	U	25	U	25	U	25	U	25	U	25	U	25	U
4,6-Dinitro-2-methylphenol	25	UJ	25	UJ	25	UJ	25	U	25	UJ	25	UJ	25	U
4-Bromophenyl-phenylether	10	U	10	U	10	U	10	U	10	U	10	U	10	U
4-Chloro-3-methylphenol	10	U	10	U	10	U	10	U	10	U	10	U	10	U
4-Chloroaniline	10	U	10	U	10	U	10	U	10	U	10	U	10	U
4-Chlorophenyl-phenylether	10	U	10	U	10	U	10	U	10	U	10	U	10	U
4-Methylphenol	10	U	10	U	10	U	10	U	10	U	10	U	10	U
4-Nitroaniline	25	U	25	U	25	U	25	U	25	U	25	U	25	U

Appendix C
Table C-3.1. Summary of Groundwater Analytical Results, Initial Screening
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Sample ID	17G00101		17G00201		17G00301		17G00401		17G00501		17G00501D		17G02401	
Lab ID	G7716001		G7716002		G7716003		G7716004		G7716005		G7716006		G7731005	
Sampling Date	31-May-95		31-May-95		31-May-95		31-May-95		31-May-95		31-May-95		2-Jun-95	
4-Nitrophenol	25	UJ	25	UJ	25	UJ	25	U	25	UJ	25	UJ	25	U
Acenaphthene	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Acenaphthylene	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Anthracene	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Benzo(a)anthracene	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Benzo(a)pyrene	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Benzo(b)fluoranthene	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Benzo(g,h,i)perylene	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Benzo(k)fluoranthene	10	U	10	U	10	U	10	U	10	U	10	U	10	U
bis(2-Chloroethoxy)methane	10	U	10	U	10	U	10	U	10	U	10	U	10	U
bis(2-Chloroethyl)ether	10	U	10	U	10	U	10	U	10	U	10	U	10	U
bis(2-Ethylhexyl)phthalate	1	U	1	U	1	U	1		1	U	1		1	
Butylbenzylphthalate	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Carbazole	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Chrysene	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Di-n-butylphthalate	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Di-n-octylphthalate	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Dibenz(a,h)anthracene	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Dibenzofuran	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Diethylphthalate	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Dimethylphthalate	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Fluoranthene	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Fluorene	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Hexachlorobenzene	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Hexachlorobutadiene	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Hexachlorocyclopentadiene	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Hexachloroethane	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Indeno(1,2,3-cd)pyrene	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Isophorone	10	U	10	U	10	U	10	U	10	U	10	U	10	U
N-Nitroso-di-n-propylamine	10	U	10	U	10	U	10	U	10	U	10	U	10	U
N-Nitrosodiphenylamine (1)	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Naphthalene	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Nitrobenzene	10	U	10	U	10	U	10	U	10	U	10	U	10	U

Appendix C

Table C-3.1. Summary of Groundwater Analytical Results, Initial Screening

Study Area 17

Naval Training Center, Orlando

Orlando, FL

Sample ID	17G00101		17G00201		17G00301		17G00401		17G00501		17G00501D		17G02401	
Lab ID	G7716001		G7716002		G7716003		G7716004		G7716005		G7716006		G7731005	
Sampling Date	31-May-95		31-May-95		31-May-95		31-May-95		31-May-95		31-May-95		2-Jun-95	
Pentachlorophenol	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Phenanthrene	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Phenol	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Pyrene	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Pesticides/PCBs, µg/L														
4,4'-DDD	0.1	U	0.1	U	0.1	U	0.1	U	0.1	UJ	0.1	U	0.1	UJ
4,4'-DDE	0.1	U	0.1	U	0.1	U	0.1	U	0.1	UJ	0.1	U	0.1	UJ
4,4'-DDT	0.1	U	0.1	U	0.1	U	0.1	U	0.1	UJ	0.1	U	0.1	UJ
Aldrin	0.05	U	0.05	U	0.05	U	0.05	U	0.05	UJ	0.05	U	0.05	UJ
alpha-BHC	0.05	U	0.05	U	0.05	U	0.05	U	0.05	UJ	0.05	U	0.05	UJ
alpha-Chlordane	0.05	U	0.05	U	0.05	U	0.05	U	0.05	UJ	0.05	U	0.05	UJ
Aroclor-1016	0.5	U	0.5	U	0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	UJ
Aroclor-1221	0.5	U	0.5	U	0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	UJ
Aroclor-1232	0.5	U	0.5	U	0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	UJ
Aroclor-1242	0.5	U	0.5	U	0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	UJ
Aroclor-1248	0.5	U	0.5	U	0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	UJ
Aroclor-1254	0.5	U	0.5	U	0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	UJ
Aroclor-1260	0.5	U	0.5	U	0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	UJ
beta-BHC	0.05	U	0.05	U	0.05	U	0.05	U	0.05	UJ	0.05	U	0.05	UJ
delta-BHC	0.05	U	0.05	U	0.05	U	0.05	U	0.05	UJ	0.05	U	0.05	UJ
Dieldrin	0.1	U	0.1	U	0.1	U	0.1	U	0.1	UJ	0.1	U	0.1	UJ
Endosulfan I	0.05	U	0.05	U	0.05	U	0.05	U	0.05	UJ	0.05	U	0.05	UJ
Endosulfan II	0.1	U	0.1	U	0.1	U	0.1	U	0.1	UJ	0.1	U	0.1	UJ
Endosulfan sulfate	0.1	U	0.1	U	0.1	U	0.1	U	0.1	UJ	0.1	U	0.1	UJ
Endrin	0.1	U	0.1	U	0.1	U	0.1	U	0.1	UJ	0.1	U	0.1	UJ
Endrin aldehyde	0.1	U	0.1	U	0.1	U	0.1	U	0.1	UJ	0.1	U	0.1	UJ
Endrin ketone	0.1	U	0.1	U	0.1	U	0.1	U	0.1	UJ	0.1	U	0.1	UJ
gamma-BHC (Lindane)	0.05	U	0.05	U	0.05	U	0.05	U	0.05	UJ	0.05	U	0.05	UJ
gamma-Chlordane	0.05	U	0.05	U	0.05	U	0.05	U	0.05	UJ	0.05	U	0.05	UJ
Heptachlor	0.05	U	0.05	U	0.05	U	0.05	U	0.05	UJ	0.05	U	0.05	UJ
Heptachlor epoxide	0.05	U	0.05	U	0.05	U	0.05	U	0.05	UJ	0.05	U	0.05	UJ
Methoxychlor	0.5	U	0.5	U	0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	UJ
Toxaphene	5	U	5	U	5	U	5	U	5	UJ	5	U	5	UJ

Appendix C
Table C-3.1. Summary of Groundwater Analytical Results, Initial Screening
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Sample ID	17G00101		17G00201		17G00301		17G00401		17G00501		17G00501D		17G02401	
Lab ID	G7716001		G7716002		G7716003		G7716004		G7716005		G7716006		G7731005	
Sampling Date	31-May-95		31-May-95		31-May-95		31-May-95		31-May-95		31-May-95		2-Jun-95	
Inorganics, µg/L														
Aluminum	910		4800		6650		1050		473		1340		551	
Antimony	2.7	J	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	UJ
Arsenic	1.9	UJ	1.9	UJ	1.9	UJ	2.1	J	2.7	J	2.4	J	1.9	UJ
Barium	66.9	J	40.9	J	53.2	J	41.2	J	33.2	J	34.4	J	115	J
Beryllium	0.12	J	0.15	J	0.17	J	0.1	UJ	0.1	UJ	0.1	UJ	0.1	UJ
Cadmium	3.5	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.5	U
Calcium	136000		67600		17800		36400		34700		34000		44700	
Chromium	3.1	U	3.1	U	6.1	B	3.1	U	3.1	U	3.1	U	5.2	B
Cobalt	2.9	UJ	2.9	UJ	2.9	UJ	2.9	UJ	2.9	UJ	2.9	UJ	2.9	UJ
Copper	3.2	U	4.4	U	1.7	U	1.4	U	23.8	B	2.2	U	2.7	U
Iron	108		1310		14800		6760		7650		6460		100000	
Lead	1.5	UJ	2.4	B	3.4		1.5	U	1.5	U	1.5	U	1.5	U
Magnesium	14700		7240		5470		10400		6130		5670		3730	B
Manganese	10.5	B	21		28.3		38.5		20.2		18.9		265	
Mercury	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U
Nickel	14.2	U	14.2	U	14.2	U	14.2	U	14.2	U	14.2	U	25.6	B
Potassium	15100	U	1460	J	747	J	1690	J	2090	J	2140	J	3330	J
Selenium	2.3	UJ	2.3	UJ	2.3	J	2.3	U	2.3	U	2.3	U	2.3	U
Silver	2.6	U	2.6	U	2.6	U	2.6	U	2.6	U	2.6	U	2.6	U
Sodium	16100		7960		3670	B	9690		7090		6790		4660	B
Thallium	1.8	U	4.8	J	1.8	UJ	1.8	U	1.8	U	1.8	U	1.8	UJ
Vanadium	81.5		19.7	B	12.6	B	5.9	B	6.4	B	7.6	B	4.4	B
Zinc	2.1	B	3.9	B	2.5	B	3.8	B	5.1	B	2.5	B	226	
General Chemistry, mg/L														
Total Petroleum Hydrocarbons	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Total Suspended Solids	5		3		90		3		1	U	3		76	

Appendix C
Table C-3.2. Summary of Groundwater Analytical Results, Volatile Organics
Groundwater Evaluation, Phase I
Study Area 17

Naval Training Center
Orlando, FL

Sample ID	17G00403		17G00601		17G00701		17G00801		17G00901		17G01001		17G01001D	
Lab ID	C7B130145008		C7B130145003		C7B130145005		C7B130145004		C7B130145009		C7B130145006		C7B130145007	
Sampling Date	12-Feb-97		12-Feb-97		12-Feb-97		12-Feb-97		12-Feb-97		12-Feb-97		12-Feb-97	
Volatile organics, µg/L														
1,1,1,2-Tetrachloroethane	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,1-Trichloroethane	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2,2-Tetrachloroethane	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-Trichloroethane	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethane	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethene	16		0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloropropene	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichlorobenzene	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichloropropane	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-Trichlorobenzene	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-Trimethylbenzene	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dibromo-3-chloropropane	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dibromoethane	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichlorobenzene	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloroethane	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloropropane	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3,5-Trimethylbenzene	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-Dichlorobenzene	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-Dichloropropane	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
1,4-Dichlorobenzene	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
2,2-Dichloropropane	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
2-Chlorotoluene	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Chlorotoluene	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
Benzene	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromobenzene	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromochloromethane	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromodichloromethane	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromoform	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromomethane	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
Carbon tetrachloride	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U

Appendix C
Table C-3.2. Summary of Groundwater Analytical Results, Volatile Organics
Groundwater Evaluation, Phase I
Study Area 17

Naval Training Center
Orlando, FL

Sample ID	17G00403		17G00601		17G00701		17G00801		17G00901		17G01001		17G01001D	
Lab ID	C7B130145008		C7B130145003		C7B130145005		C7B130145004		C7B130145009		C7B130145006		C7B130145007	
Sampling Date	12-Feb-97		12-Feb-97		12-Feb-97		12-Feb-97		12-Feb-97		12-Feb-97		12-Feb-97	
Chlorobenzene	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
Chlorodibromomethane	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroethane	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroform	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	1	U	1	U
Chloromethane	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	460	D	11		7.2		40		3.6		3.4		3.2	
cis-1,3-Dichloropropene	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
Dibromomethane	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
Dichlorodifluoromethane	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
Ethylbenzene	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
Hexachlorobutadiene	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
Isopropylbenzene	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
Methylene chloride	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
n-Butylbenzene	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
n-Propylbenzene	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
Naphthalene	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
p-Isopropyltoluene	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
sec-Butylbenzene	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
Styrene	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
tert-Butylbenzene	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
Tetrachloroethene	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
Toluene	0.5	U	0.5	U	1.1	U	1.1	U	0.5	U	0.5	U	0.5	U
trans-1,2-Dichloroethene	6.9		0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
trans-1,3-Dichloropropene	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethene	120	D	0.5	U	0.84	U	0.5	U	0.5	U	2.3		2.2	
Trichlorofluoromethane	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl chloride	450	D	15		67		2.9		2.6		1.4		1.6	
Xylenes (total)	0.5	U	0.5	U	0.84	U	0.5	U	0.5	U	0.5	U	0.5	U

Appendix C
Table C-3.3. Summary of Groundwater Analytical Results, Volatile Organics
Groundwater Evaluation, Phase II
Study Area 17

Naval Training Center
Orlando, FL

Sample ID	17G00202	17G00302	17G00404	17G00502	17G01003	17G01101	17G01201	17G01301	17G01401	17G01501
Lab ID	A8F180155007	A8F120181005	A8F200131002	A8F100162005	A8F200131003	A8F100162004	A8F100162006	A8F120181006	A8F120181007	A8F100162001
Sampling Date	16-Jun-98	10-Jun-98	19-Jun-98	8-Jun-98	19-Jun-98	8-Jun-98	8-Jun-98	10-Jun-98	10-Jun-98	9-Jun-98
Volatile organics, µg/L										
1,1,1,2-Tetrachloroethane	5 U	5 U	17 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1,1-Trichloroethane	5 U	5 U	17 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	5 U	5 U	17 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane	5 U	5 U	17 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethane	5 U	5 U	17 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene	5 U	5 U	26	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloropropene	5 U	5 U	17 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,3-Trichlorobenzene	5 U	5 U	17 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,3-Trichloropropane	5 U	5 U	17 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,4-Trichlorobenzene	5 U	5 U	17 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,4-Trimethylbenzene	5 U	5 U	17 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dibromo-3-chloropropane	10 U	10 U	33 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dibromoethane (EDB)	5 U	5 U	17 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethane	5 U	5 U	17 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloropropane	5 U	5 U	17 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,3,5-Trimethylbenzene	5 U	5 U	17 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,3-Dichloropropane	5 U	5 U	17 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,2-Dichloropropane	5 U	5 U	17 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Chlorotoluene	5 U	5 U	17 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Chlorotoluene	5 U	5 U	17 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzene	5 U	5 U	17 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromobenzene	5 U	5 U	17 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromochloromethane	5 U	5 U	17 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromodichloromethane	5 U	5 U	17 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromoform	5 U	5 U	17 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromomethane	10 U	10 U	33 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride	5 U	5 U	17 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chlorobenzene	5 U	5 U	17 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chlorodibromomethane	5 U	5 U	17 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chloroethane	10 U	10 U	33 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroform	5 U	5 U	17 U	0.69 J	5 U	5 U	5 U	5 U	5 U	5 U
Chloromethane	10 U	10 U	33 U	1.2 J	10 U	10 U	10 U	10 U	10 U	10 U

Appendix C
Table C-3.3. Summary of Groundwater Analytical Results, Volatile Organics
Groundwater Evaluation, Phase II
Study Area 17

Naval Training Center
Orlando, FL

Sample ID	17G00202		17G00302		17G00404		17G00502		17G01003	
Lab ID	A8F180155007		A8F120181005		A8F200131002		A8F100162005		A8F200131003	
Sampling Date	16-Jun-98		10-Jun-98		19-Jun-98		8-Jun-98		19-Jun-98	
Volatile organics, µg/L										
cis-1,2-Dichloroethene	2.5	U	2.5	U	420		2.5	U	30	
cis-1,3-Dichloropropene	5	U	5	U	17	U	5	U	5	U
Dibromomethane	5	U	5	U	17	U	5	U	5	U
Dichlorodifluoromethane	10	U	10	U	33	U	10	U	10	U
Ethylbenzene	5	U	5	U	17	U	5	U	5	U
Hexachlorobutadiene	5	U	5	U	17	U	5	U	5	U
Isopropylbenzene	5	U	5	U	17	U	5	U	5	U
m-Dichlorobenzene	5	U	5	U	17	U	0.67	J	5	U
m-Xylene & p-Xylene	2.5	U	2.5	U	8.3	U	2.5	U	2.5	U
Methylene chloride	5	U	5	U	17	U	5	U	5	U
n-Butylbenzene	5	U	5	U	17	U	5	U	5	U
n-Propylbenzene	5	U	5	U	17	U	5	U	5	U
Naphthalene	5	U	5	U	17	U	5	U	5	U
o-Dichlorobenzene	5	U	5	U	17	U	5	U	5	U
o-Xylene	2.5	U	2.5	U	8.3	U	2.5	U	2.5	U
p-Dichlorobenzene	5	U	5	U	17	U	5	U	5	U
p-Isopropyltoluene	5	U	5	U	17	U	5	U	5	U
sec-Butylbenzene	5	U	5	U	17	U	5	U	5	U
Styrene	5	U	5	U	17	U	5	U	5	U
tert-Butylbenzene	5	U	5	U	17	U	5	U	5	U
Tetrachloroethene	5	U	5	U	17	U	5	U	5	U
Toluene	5	U	5	U	17	U	5	U	5	U
trans-1,2-Dichloroethene	2.5	U	2.5	U	4.1	J	2.5	U	2.5	U
trans-1,3-Dichloropropene	5	U	5	U	17	U	5	U	5	U
Trichloroethene	5	U	5	U	260		5	U	6.9	
Trichlorofluoromethane	10	U	10	U	33	U	10	U	10	U
Vinyl chloride	10	U	10	U	350		10	U	10	

Sample ID	17G01101		17G01201		17G01301		17G01401		17G01501	
Lab ID	A8F100162004		A8F100162006		A8F120181006		A8F120181007		A8F100162001	
Sampling Date	8-Jun-98		8-Jun-98		10-Jun-98		10-Jun-98		9-Jun-98	
Volatile organics, µg/L										
cis-1,2-Dichloroethene	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
cis-1,3-Dichloropropene	5	U	5	U	5	U	5	U	5	U
Dibromomethane	5	U	5	U	5	U	5	U	5	U
Dichlorodifluoromethane	10	U	10	U	10	U	10	U	10	U
Ethylbenzene	5	U	5	U	5	U	5	U	5	U
Hexachlorobutadiene	5	U	5	U	5	U	5	U	5	U
Isopropylbenzene	5	U	5	U	5	U	5	U	5	U
m-Dichlorobenzene	5	U	5	U	5	U	5	U	5	U
m-Xylene & p-Xylene	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Methylene chloride	5	U	5	U	5	U	5	U	5	U
n-Butylbenzene	5	U	5	U	5	U	5	U	5	U
n-Propylbenzene	5	U	5	U	5	U	5	U	5	U
Naphthalene	5	U	5	U	5	U	5	U	5	U
o-Dichlorobenzene	5	U	5	U	5	U	5	U	5	U
o-Xylene	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
p-Dichlorobenzene	5	U	5	U	5	U	5	U	5	U
p-Isopropyltoluene	5	U	5	U	5	U	5	U	5	U
sec-Butylbenzene	5	U	5	U	5	U	5	U	5	U
Styrene	5	U	5	U	5	U	5	U	5	U
tert-Butylbenzene	5	U	5	U	5	U	5	U	5	U
Tetrachloroethene	5	U	5	U	5	U	5	U	5	U
Toluene	5	U	5	U	5	U	5	U	5	U
trans-1,2-Dichloroethene	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
trans-1,3-Dichloropropene	5	U	5	U	5	U	5	U	5	U
Trichloroethene	5	U	5	U	5	U	5	U	5	U
Trichlorofluoromethane	10	U	10	U	10	U	10	U	10	U
Vinyl chloride	10	U	10	U	10	U	10	U	10	U

Appendix C
Table C-3.3. Summary of Groundwater Analytical Results, Volatile Organics
Groundwater Evaluation, Phase II
Study Area 17

Naval Training Center
Orlando, FL

Sample ID	17G01601		17G01701		17G01801		17G01901		17G02001		17G02101		17G02201		17G02301		17G02301D		17G02401	
Lab ID	A8F100162002		A8F100162003		A8F120181003		A8F120181002		A8F120181004		A8F180155006		A8F180155005		A8F200131008		A8F200131007		A8F200131006	
Sampling Date	9-Jun-98		9-Jun-98		11-Jun-98		11-Jun-98		11-Jun-98		16-Jun-98		16-Jun-98		18-Jun-98		18-Jun-98		18-Jun-98	
Volatile organics, µg/L																				
1,1,1,2-Tetrachloroethane	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	2500	U
1,1,1-Trichloroethane	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	2500	U
1,1,2,2-Tetrachloroethane	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	2500	U
1,1,2-Trichloroethane	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	2500	U
1,1-Dichloroethane	5	U	5	U	5	U	5	U	3.4	J	5	U	5	U	5	U	5	U	2500	U
1,1-Dichloroethene	5	U	5	U	5	U	5	U	1	J	5	U	5	U	5	U	5	U	2500	U
1,1-Dichloropropene	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	2500	U
1,2,3-Trichlorobenzene	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	2500	U
1,2,3-Trichloropropane	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	2500	U
1,2,4-Trichlorobenzene	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	2500	U
1,2,4-Trimethylbenzene	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	2500	U
1,2-Dibromo-3-chloropropane	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	5000	U
1,2-Dibromoethane (EDB)	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	2500	U
1,2-Dichloroethane	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	2500	U
1,2-Dichloropropane	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	2500	U
1,3,5-Trimethylbenzene	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	2500	U
1,3-Dichloropropane	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	2500	U
2,2-Dichloropropane	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	2500	U
2-Chlorotoluene	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	2500	U
4-Chlorotoluene	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	2500	U
Benzene	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	2500	U
Bromobenzene	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	2500	U
Bromochloromethane	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	2500	U
Bromodichloromethane	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	2500	U
Bromoform	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	2500	U
Bromomethane	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	5000	U
Carbon tetrachloride	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	2500	U
Chlorobenzene	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	2500	U
Chlorodibromomethane	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	2500	U
Chloroethane	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	5000	U
Chloroform	5	U	5	U	5	U	5	U	5	U	5	U	0.89	J	5	U	5	U	2500	U
Chloromethane	10	U	10	U	10	U	10	U	10	U	10	U	1.6	J	10	U	10	U	5000	U

Appendix C
Table C-3.3. Summary of Groundwater Analytical Results, Volatile Organics
Groundwater Evaluation, Phase II
Study Area 17

Naval Training Center
Orlando, FL

Sample ID	17G01601	17G01701	17G01801	17G01901	17G02001	17G02101	17G02201	17G02301	17G02301D	17G02401
Lab ID	A8F100162002	A8F100162003	A8F120181003	A8F120181002	A8F120181004	A8F180155006	A8F180155005	A8F200131008	A8F200131007	A8F200131006
Sampling Date	9-Jun-98	9-Jun-98	11-Jun-98	11-Jun-98	11-Jun-98	16-Jun-98	16-Jun-98	18-Jun-98	18-Jun-98	18-Jun-98
Volatile organics, µg/L										
cis-1,2-Dichloroethene	2.5 U	2.5 U	2.5 U	2.5 U	98	2.5 U	1.7 J	8.8	9.9	1200 U
cis-1,3-Dichloropropene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	2500 U
Dibromomethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	2500 U
Dichlorodifluoromethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	5000 U
Ethylbenzene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	2500 U
Hexachlorobutadiene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	2500 U
Isopropylbenzene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	2500 U
m-Dichlorobenzene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	2500 U
m-Xylene & p-Xylene	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	1200 U
Methylene chloride	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	2500 U
n-Butylbenzene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	2500 U
n-Propylbenzene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	2500 U
Naphthalene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	2500 U
o-Dichlorobenzene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	2500 U
o-Xylene	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	1200 U
p-Dichlorobenzene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	2500 U
p-Isopropyltoluene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	2500 U
sec-Butylbenzene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	2500 U
Styrene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	2500 U
tert-Butylbenzene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	2500 U
Tetrachloroethene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	2500 U
Toluene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	2500 U
trans-1,2-Dichloroethene	2.5 U	2.5 U	2.5 U	2.5 U	0.76 J	2.5 U	2.5 U	2.5 U	2.5 U	1200 U
trans-1,3-Dichloropropene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	2500 U
Trichloroethene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	20	25	65000
Trichlorofluoromethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	5000 U
Vinyl chloride	10 U	10 U	10 U	10 U	140	10 U	10 U	10 U	10 U	5000 U

Appendix C
Table C-3.3. Summary of Groundwater Analytical Results, Volatile Organics
Groundwater Evaluation, Phase II
Study Area 17

Naval Training Center
Orlando, FL

Sample ID	17G02401D	17G02501	17G02601	17G02701	17G02801	17G02901	17G03001	17G03101	17G03201	17G03301
Lab ID	A8F200131005	A8F200131004	A8F180155002	A8F180155003	A8F180155004	A8F240177002	A8F240177005	A8F240177006	A8F240177007	A8F240177008
Sampling Date	18-Jun-98	18-Jun-98	17-Jun-98	17-Jun-98	17-Jun-98	23-Jun-98	23-Jun-98	23-Jun-98	23-Jun-98	23-Jun-98
Volatile organics, µg/L										
1,1,1,2-Tetrachloroethane	2500 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	5 U	5 U
1,1,1-Trichloroethane	2500 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	5 U	5 U
1,1,2,2-Tetrachloroethane	2500 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	5 U	5 U
1,1,2-Trichloroethane	2500 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	5 U	5 U
1,1-Dichloroethane	2500 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	5 U	5 U
1,1-Dichloroethene	2500 U	5 U	5 U	6.1 J	5 U	5 U	5 U	10 U	5 U	5 U
1,1-Dichloropropene	2500 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	5 U	5 U
1,2,3-Trichlorobenzene	2500 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	5 U	5 U
1,2,3-Trichloropropane	2500 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	5 U	5 U
1,2,4-Trichlorobenzene	2500 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	5 U	5 U
1,2,4-Trimethylbenzene	2500 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	5 U	5 U
1,2-Dibromo-3-chloropropane	5000 U	10 U	10 U	20 U	10 U	10 U	10 U	20 U	10 U	10 U
1,2-Dibromoethane (EDB)	2500 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	5 U	5 U
1,2-Dichloroethane	2500 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	5 U	5 U
1,2-Dichloropropane	2500 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	5 U	5 U
1,3,5-Trimethylbenzene	2500 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	5 U	5 U
1,3-Dichloropropane	2500 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	5 U	5 U
2,2-Dichloropropane	2500 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	5 U	5 U
2-Chlorotoluene	2500 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	5 U	5 U
4-Chlorotoluene	2500 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	5 U	5 U
Benzene	2500 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	5 U	5 U
Bromobenzene	2500 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	5 U	5 U
Bromochloromethane	2500 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	5 U	5 U
Bromodichloromethane	2500 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	5 U	5 U
Bromoform	2500 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	5 U	5 U
Bromomethane	5000 U	10 U	10 U	20 U	10 U	10 U	10 U	20 U	10 U	10 U
Carbon tetrachloride	2500 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	5 U	5 U
Chlorobenzene	2500 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	5 U	5 U
Chlorodibromomethane	2500 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	5 U	5 U
Chloroethane	5000 U	10 U	10 U	20 U	10 U	10 U	10 U	20 U	10 U	10 U
Chloroform	2500 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	5 U	5 U
Chloromethane	5000 U	10 U	10 U	20 U	10 U	10 U	10 U	20 U	10 U	10 U

Appendix C

Table C-3.3. Summary of Groundwater Analytical Results, Volatile Organics
Groundwater Evaluation, Phase II
Study Area 17

Naval Training Center
Orlando, FL

Sample ID	17G02401D		17G02501		17G02601		17G02701		17G02801		17G02901		17G03001		17G03101		17G03201		17G03301	
Lab ID	A8F200131005		A8F200131004		A8F180155002		A8F180155003		A8F180155004		A8F240177002		A8F240177005		A8F240177006		A8F240177007		A8F240177008	
Sampling Date	18-Jun-98		18-Jun-98		17-Jun-98		17-Jun-98		17-Jun-98		23-Jun-98		23-Jun-98		23-Jun-98		23-Jun-98		23-Jun-98	
Volatile organics, µg/L																				
cis-1,2-Dichloroethene	1200	U	0 78	J	1.9	J	360		2.3	J	2.5	U	1.1	J	220		81		2.5	U
cis-1,3-Dichloropropene	2500	U	5	U	5	U	10	U	5	U	5	U	5	U	10	U	5	U	5	U
Dibromomethane	2500	U	5	U	5	U	10	U	5	U	5	U	5	U	10	U	5	U	5	U
Dichlorodifluoromethane	5000	U	10	U	10	U	20	U	10	U	10	U	10	U	20	U	10	U	10	U
Ethylbenzene	2500	U	5	U	5	U	10	U	5	U	5	U	5	U	10	U	5	U	5	U
Hexachlorobutadiene	2500	U	5	U	5	U	10	U	5	U	5	U	5	U	10	U	5	U	5	U
Isopropylbenzene	2500	U	5	U	5	U	10	U	5	U	5	U	5	U	10	U	5	U	5	U
m-Dichlorobenzene	2500	U	5	U	5	U	10	U	5	U	5	U	5	U	10	U	5	U	5	U
m-Xylene & p-Xylene	1200	U	2.5	U	2.5	U	5	U	2.5	U	2.5	U	2.5	U	5	U	2.5	U	2.5	U
Methylene chloride	2500	U	5	U	5	U	10	U	5	U	5	U	5	U	10	U	5	U	5	U
n-Butylbenzene	2500	U	5	U	5	U	10	U	5	U	5	U	1.5	J	10	U	5	U	5	U
n-Propylbenzene	2500	U	5	U	5	U	10	U	5	U	5	U	0.81	J	10	U	5	U	5	U
Naphthalene	2500	U	5	U	5	U	10	U	5	U	5	U	5	U	10	U	5	U	5	U
o-Dichlorobenzene	2500	U	5	U	5	U	10	U	5	U	5	U	5	U	10	U	5	U	5	U
o-Xylene	1200	U	2.5	U	2.5	U	5	U	2.5	U	2.5	U	2.5	U	5	U	2.5	U	2.5	U
p-Dichlorobenzene	2500	U	5	U	5	U	10	U	5	U	5	U	5	U	10	U	5	U	5	U
p-Isopropyltoluene	2500	U	5	U	5	U	10	U	5	U	5	U	5	U	10	U	5	U	5	U
sec-Butylbenzene	2500	U	5	U	5	U	10	U	5	U	5	U	5	U	10	U	5	U	5	U
Styrene	2500	U	5	U	5	U	10	U	5	U	5	U	5	U	10	U	5	U	5	U
tert-Butylbenzene	2500	U	5	U	5	U	10	U	5	U	5	U	5	U	10	U	5	U	5	U
Tetrachloroethene	2500	U	0.49	J	5	U	10	U	5	U	5	U	5	U	10	U	5	U	5	U
Toluene	2500	U	5	U	5	U	1.8	J	5	U	5	U	5	U	1	J	5	U	5	U
trans-1,2-Dichloroethene	1200	U	2.5	U	2.5	U	12		2.5	U	2.5	U	2.5	U	2.2	J	1.9	J	2.5	U
trans-1,3-Dichloropropene	2500	U	5	U	5	U	10	U	5	U	5	U	5	U	10	U	5	U	5	U
Trichloroethene	72000		39		5	U	60		1.4	J	2.5	J	5	U	10	U	5	U	5	U
Trichlorofluoromethane	5000	U	10	U	10	U	20	U	10	U	10	U	10	U	20	U	10	U	10	U
Vinyl chloride	5000	U	10	U	13		360		10	U	10	U	1	J	130		82		10	U

Appendix C
Table C-3.4. Summary of DPT Groundwater Analytical Results, Volatile Organics
Groundwater Evaluation, Phase II, Study Area 17

Naval Training Center
Orlando, FL

Sample ID	17Q00104		17Q00202		17Q00305		17Q00308		17Q00403		17Q00703		17Q01005		17Q01203	
Lab ID	A8C200122003		A8C200122002		A8C210123001		A8D070152005		A8C210123002		A8C240156001		A8C240156002		A8C240156004	
Sampling Date	18-Mar-98		17-Mar-98		17-Mar-98		4-Apr-98		17-Mar-98		18-Mar-98		21-Mar-98		20-Mar-98	
Volatile organics, µg/L																
1,1,1,2-Tetrachloroethane	17	U	250	U	5	U	5	U	170	U	5	U	25	U	50	U
1,1,1-Trichloroethane	17	U	250	U	5	U	5	U	170	U	5	U	25	U	50	U
1,1,2,2-Tetrachloroethane	17	U	250	U	5	U	5	U	170	U	5	U	25	U	50	U
1,1,2-Trichloroethane	17	U	250	U	5	U	0.51	J B	170	U	5	U	25	U	50	U
1,1-Dichloroethane	17	U	250	U	5	U	5	U	170	U	5	U	25	U	50	U
1,1-Dichloroethene	2.8	J	78	J	5	U	5	U	170	U	5	U	3.3	J	17	J
1,1-Dichloropropene	17	U	250	U	5	U	5	U	170	U	5	U	25	U	50	U
1,2,3-Trichlorobenzene	17	U	250	U	5	U	5	U	170	U	5	U	25	U	50	U
1,2,3-Trichloropropane	17	U	250	U	5	U	5	U	170	U	5	U	25	U	50	U
1,2,4-Trichlorobenzene	17	U	250	U	5	U	5	U	170	U	5	U	25	U	50	U
1,2,4-Trimethylbenzene	17	U	250	U	5	U	5	U	170	U	5	U	25	U	50	U
1,2-Dibromo-3-chloropropane	33	U	500	U	10	U	10	U	330	U	10	U	50	U	100	U
1,2-Dibromoethane (EDB)	17	U	250	U	5	U	5	U	170	U	5	U	25	U	50	U
1,2-Dichloroethane	17	U	250	U	5	U	5	U	170	U	5	U	25	U	50	U
1,2-Dichloropropane	17	U	250	U	5	U	5	U	170	U	5	U	25	U	50	U
1,3,5-Trimethylbenzene	17	U	250	U	5	U	5	U	170	U	5	U	25	U	50	U
1,3-Dichloropropane	17	U	250	U	5	U	5	U	170	U	5	U	25	U	50	U
2,2-Dichloropropane	17	U	250	U	5	U	5	U	170	U	5	U	25	U	50	U
2-Chlorotoluene	17	U	250	U	5	U	5	U	170	U	5	U	25	U	50	U
4-Chlorotoluene	17	U	250	U	5	U	5	U	170	U	5	U	25	U	50	U
Benzene	17	U	250	U	5	U	5	U	170	U	5	U	25	U	50	U
Bromobenzene	17	U	250	U	5	U	5	U	170	U	5	U	25	U	50	U
Bromochloromethane	17	U	250	U	5	U	5	U	170	U	5	U	25	U	50	U
Bromodichloromethane	17	U	250	U	5	U	5	U	170	U	5	U	25	U	50	U
Bromoform	17	U	250	U	5	U	0.58	J B	170	U	5	U	25	U	50	U
Bromomethane	33	U	500	U	10	U	10	U	330	U	10	U	50	U	100	U
Carbon tetrachloride	17	U	250	U	5	U	5	U	170	U	5	U	25	U	50	U
Chlorobenzene	17	U	250	U	5	U	5	U	170	U	5	U	25	U	50	U
Chlorodibromomethane	17	U	250	U	5	U	5	U	170	U	5	U	25	U	50	U
Chloroethane	33	U	500	U	10	U	10	U	330	U	10	U	50	U	100	U
Chloroform	17	U	250	U	5	U	5	U	170	U	5	U	25	U	50	U

Appendix C
Table C-3.4. Summary of DPT Groundwater Analytical Results, Volatile Organics
Groundwater Evaluation, Phase II, Study Area 17

Naval Training Center
Orlando, FL

Sample ID	17Q00104	17Q00202	17Q00305	17Q00308	17Q00403	17Q00703	17Q01005	17Q01203
Lab ID	A8C200122003	A8C200122002	A8C210123001	A8D070152005	A8C210123002	A8C240156001	A8C240156002	A8C240156004
Sampling Date	18-Mar-98	17-Mar-98	17-Mar-98	4-Apr-98	17-Mar-98	18-Mar-98	21-Mar-98	20-Mar-98
Volatile organics, µg/L								
Chloromethane	33 U	500 U	10 U	10 U	330 U	1.1 J	50 U	100 U
cis-1,2-Dichloroethene	480	5900	8.6	8.7	1300	2.5 U	720	1900
cis-1,3-Dichloropropene	17 U	250 U	5 U	5 U	170 U	5 U	25 U	50 U
Dibromomethane	17 U	250 U	5 U	5 U	170 U	5 U	25 U	50 U
Dichlorodifluoromethane	33 U	500 U	10 U	10 U	330 U	10 U	50 U	100 U
Ethylbenzene	17 U	250 U	5 U	5 U	170 U	5 U	25 U	50 U
Hexachlorobutadiene	17 U	250 U	2.1 J	5 U	170 U	5 U	25 U	50 U
Isopropylbenzene	17 U	250 U	5 U	5 U	170 U	5 U	25 U	50 U
m-Dichlorobenzene	17 U	250 U	5 U	0.65 J B	170 U	5 U	25 U	50 U
m-Xylene & p-Xylene	8.3 U	120 U	2.5 U	2.5 U	83 U	2.5 U	12 U	25 U
Methylene chloride	17 U	250 U	5 U	5 U	170 U	5 U	25 U	50 U
n-Butylbenzene	17 U	250 U	5 U	5 U	170 U	5 U	25 U	50 U
n-Propylbenzene	17 U	250 U	5 U	5 U	170 U	5 U	25 U	50 U
Naphthalene	9.3 J	250 U	4.2 J	5 U	170 U	5 U	25 U	50 U
o-Dichlorobenzene	17 U	250 U	5 U	0.89 J	170 U	5 U	25 U	50 U
o-Xylene	8.3 U	120 U	2.5 U	2.5 U	83 U	2.5 U	12 U	25 U
p-Dichlorobenzene	17 U	250 U	5 U	0.86 J B	170 U	5 U	25 U	50 U
p-Isopropyltoluene	17 U	250 U	5 U	5 U	170 U	5 U	25 U	50 U
sec-Butylbenzene	17 U	250 U	5 U	5 U	170 U	5 U	25 U	50 U
Styrene	17 U	250 U	5 U	5 U	170 U	5 U	25 U	50 U
tert-Butylbenzene	17 U	250 U	5 U	5 U	170 U	5 U	25 U	50 U
Tetrachloroethene	17 U	250 U	5 U	5 U	170 U	5 U	25 U	50 U
Toluene	1.9 J	250 U	5 U	5 U	21 J	5 U	25 U	50 U
trans-1,2-Dichloroethene	8.3 U	69 J	2.5 U	2.5 U	83 U	2.5 U	11 J	54
trans-1,3-Dichloropropene	17 U	250 U	5 U	5 U	170 U	5 U	25 U	50 U
Trichloroethene	380	1300	0.82 J	1.1 J	5700	5 U	640	75
Trichlorofluoromethane	33 U	500 U	10 U	10 U	330 U	10 U	50 U	100 U
Vinyl chloride	90	2300	2 J	9.5 J	230 J	10 U	16 J	140

Appendix C
Table C-3 4 Summary of DPT Groundwater Analytical Results, Volatile Organics
Groundwater Evaluation, Phase II, Study Area 17

Naval Training Center
Orlando, FL

Sample ID	17Q01303		17Q01306		17Q01607		17Q01704	
Lab ID	A8C240156003		A8D070152006		A8D070152007		A8D070152008	
Sampling Date	20-Mar-98		4-Apr-98		4-Apr-98		25-Mar-98	
Volatile organics, µg/L								
1,1,1,2-Tetrachloroethane	50	U	5	U	5	U	17000	U
1,1,1-Trichloroethane	50	U	5	U	5	U	17000	U
1,1,2,2-Tetrachloroethane	50	U	5	U	5	U	17000	U
1,1,2-Trichloroethane	50	U	5	U	5	U	17000	U
1,1-Dichloroethane	50	U	5	U	5	U	17000	U
1,1-Dichloroethene	14	J	5	U	5	U	17000	U
1,1-Dichloropropene	50	U	5	U	5	U	17000	U
1,2,3-Trichlorobenzene	50	U	5	U	5	U	17000	U
1,2,3-Trichloropropane	50	U	5	U	5	U	17000	U
1,2,4-Trichlorobenzene	50	U	5	U	5	U	17000	U
1,2,4-Trimethylbenzene	50	U	5	U	5	U	17000	U
1,2-Dibromo-3-chloropropane	100	U	10	U	10	U	33000	U
1,2-Dibromoethane (EDB)	50	U	5	U	5	U	17000	U
1,2-Dichloroethane	50	U	5	U	5	U	17000	U
1,2-Dichloropropane	50	U	5	U	5	U	17000	U
1,3,5-Trimethylbenzene	50	U	5	U	5	U	17000	U
1,3-Dichloropropane	50	U	5	U	5	U	17000	U
2,2-Dichloropropane	50	U	5	U	5	U	17000	U
2-Chlorotoluene	50	U	5	U	5	U	17000	U
4-Chlorotoluene	50	U	5	U	5	U	17000	U
Benzene	50	U	5	U	5	U	17000	U
Bromobenzene	50	U	5	U	5	U	17000	U
Bromochloromethane	50	U	5	U	5	U	17000	U
Bromodichloromethane	50	U	5	U	5	U	17000	U
Bromoform	50	U	5	U	5	U	17000	U
Bromomethane	100	U	10	U	10	U	33000	U
Carbon tetrachloride	50	U	5	U	5	U	17000	U
Chlorobenzene	50	U	5	U	5	U	17000	U
Chlorodibromomethane	50	U	5	U	5	U	17000	U
Chloroethane	100	U	10	U	10	U	33000	U
Chloroform	50	U	5	U	5	U	17000	U

Appendix C

Table C-3.4. Summary of DPT Groundwater Analytical Results, Volatile Organics
Groundwater Evaluation, Phase II, Study Area 17

Naval Training Center
Orlando, FL

Sample ID	17Q01303		17Q01306		17Q01607		17Q01704	
Lab ID	A8C240156003		A8D070152006		A8D070152007		A8D070152008	
Sampling Date	20-Mar-98		4-Apr-98		4-Apr-98		25-Mar-98	
Volatile organics, µg/L								
Chloromethane	100	U	10	U	10	U	33000	U
cis-1,2-Dichloroethene	790		5.6		2.5	U	8300	U
cis-1,3-Dichloropropene	50	U	5	U	5	U	17000	U
Dibromomethane	50	U	5	U	5	U	17000	U
Dichlorodifluoromethane	100	U	10	U	10	U	33000	U
Ethylbenzene	50	U	5	U	5	U	17000	U
Hexachlorobutadiene	50	U	5	U	5	U	17000	U
Isopropylbenzene	50	U	5	U	5	U	17000	U
m-Dichlorobenzene	50	U	5	U	5	U	17000	U
m-Xylene & p-Xylene	25	U	2.5	U	2.5	U	8300	U
Methylene chloride	50	U	5	U	5	U	17000	U
n-Butylbenzene	50	U	5	U	5	U	17000	U
n-Propylbenzene	50	U	5	U	5	U	17000	U
Naphthalene	50	U	5	U	5	U	17000	U
o-Dichlorobenzene	50	U	5	U	5	U	17000	U
o-Xylene	25	U	2.5	U	2.5	U	8300	U
p-Dichlorobenzene	50	U	5	U	5	U	17000	U
p-Isopropyltoluene	50	U	5	U	5	U	17000	U
sec-Butylbenzene	50	U	5	U	5	U	17000	U
Styrene	50	U	5	U	5	U	17000	U
tert-Butylbenzene	50	U	5	U	5	U	17000	U
Tetrachloroethene	50	U	5	U	5	U	17000	U
Toluene	50	U	5	U	5	U	17000	U
trans-1,2-Dichloroethene	45		2.5	U	2.5	U	8300	U
trans-1,3-Dichloropropene	50	U	5	U	5	U	17000	U
Trichloroethene	1300		8.7		1.9	J	340000	
Trichlorofluoromethane	100	U	10	U	10	U	33000	U
Vinyl chloride	98	J	10	U	10	U	33000	U

Appendix C
Table C-3.4. Summary of DPT Groundwater Analytical Results, Volatile Organics
Groundwater Evaluation, Phase II, Study Area 17

Naval Training Center
Orlando, FL

Sample ID	17Q02002		17Q02102		17Q02404		17Q02703		17Q02805		17Q03001	
Lab ID	A8D110116002		A8D110116007		A8D110116008		A8D110116004		A8D110116006		A8D110116003	
Sampling Date	7-Apr-98		7-Apr-98		8-Apr-98		9-Apr-98		8-Apr-98		9-Apr-98	
Volatile organics, µg/L												
1,1,1-Trichloroethane	170	U	5	U	1	U	1	U	1	U	1	U
1,1,2,2-Tetrachloroethane	170	U	5	U	1	U	1	U	1	U	1	U
1,1,2-Trichloroethane	170	U	5	U	1	U	1	U	1	U	1	U
1,1-Dichloroethane	170	U	5	U	1	U	1	U	1	U	1	U
1,1-Dichloroethene	170	U	5	U	1	U	1	U	0.17	J	0.12	J
1,2-Dichloroethane	170	U	5	U	1	U	1	U	1	U	1	U
1,2-Dichloroethene (total)	3400		73		1	U	31		12		9.4	
1,2-Dichloropropane	170	U	5	U	1	U	1	U	1	U	1	U
2-Butanone	1700	U	50	U	10	U	10	U	10	U	10	U
2-Hexanone	1700	U	50	U	10	U	10	U	10	U	10	U
4-Methyl-2-pentanone	1700	U	50	U	10	U	10	U	10	U	10	U
Acetone	1700	U	50	U	38		10	U	20		10	U
Benzene	170	U	5	U	1	U	1	U	1	U	1	U
Bromodichloromethane	170	U	5	U	1	U	1	U	1	U	1	U
Bromoform	170	U	5	U	1	U	1	U	1	U	1	U
Bromomethane	330	U	10	U	2	U	2	U	2	U	2	U
Carbon disulfide	170	U	5	U	4		4.8		1.4		1	U
Carbon tetrachloride	170	U	5	U	1	U	1	U	1	U	1	U
Chlorobenzene	170	U	5	U	1	U	1	U	1	U	1	U
Chloroethane	330	U	10	U	2	U	2	U	2	U	2	U
Chloroform	170	U	5	U	1	U	1	U	1	U	1	U
Chloromethane	330	U	10	U	0.15	J	2	U	0.12	J	2	U
cis-1,3-Dichloropropene	170	U	5	U	1	U	1	U	1	U	1	U
Dibromochloromethane	170	U	5	U	1	U	1	U	1	U	1	U
Ethylbenzene	170	U	5	U	1	U	1	U	1	U	1	U
Methylene chloride	170	U	5	U	1	U	1	U	1	U	1	U
Styrene	170	U	5	U	1	U	1	U	1	U	1	U
Tetrachloroethene	170	U	5	U	1	U	1	U	1	U	1	U
Toluene	170	U	5	U	1	U	1	U	1	U	1	U
trans-1,3-Dichloropropene	170	U	5	U	1	U	1	U	1	U	0.09	J
Trichloroethene	170	U	1.5	J	1	U	1	U	1	U	1	U
Vinyl chloride	330	U	10	U	2	U	2	U	2.3		1	U
Xylenes (total)	170	U	5	U	1	U	1	U	5.7		1.2	J
									1	U	1	U

TABLE C-4

SUMMARY OF SURFACE WATER ANALYTICAL RESULTS

Appendix C
Table C-4. Summary of Surface Water Analytical Results, Groundwater Evaluation, Phase II
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Sample ID	17W02600		17W02700		17W02800		17W02900	
Lab ID	G7582009		G7582008		G7582007		G7582006	
Sampling Date	16-May-95		16-May-95		16-May-95		16-May-95	
Volatile organics, µg/L								
1,1,1-Trichloroethane	10	U	10	U	10	U	10	U
1,1,2,2-Tetrachloroethane	10	U	10	U	10	U	10	U
1,1,2-Trichloroethane	10	U	10	U	10	U	10	U
1,1-Dichloroethane	10	U	10	U	10	U	10	U
1,1-Dichloroethene	10	U	10	U	10	U	10	U
1,2-Dichloroethane	10	U	10	U	10	U	10	U
1,2-Dichloroethene (total)	10	U	10	U	10	U	10	U
1,2-Dichloropropane	10	U	10	U	10	U	10	U
2-Butanone	10	U	10	U	10	U	10	U
2-Hexanone	10	U	10	U	10	U	10	U
4-Methyl-2-pentanone	10	U	10	U	10	U	10	U
Acetone	13		9	J	10	U	7	J
Benzene	10	U	10	U	10	U	10	U
Bromodichloromethane	10	U	10	U	10	U	10	U
Bromoform	10	U	10	U	10	U	10	U
Bromomethane	10	U	10	U	10	U	10	U
Carbon disulfide	10	U	10	U	10	U	10	U
Carbon tetrachloride	10	U	10	U	10	U	10	U
Chlorobenzene	10	U	10	U	10	U	10	U
Chloroethane	10	U	10	U	10	U	10	U
Chloroform	10	U	10	U	10	U	10	U
Chloromethane	10	U	10	U	10	U	10	U
cis-1,3-Dichloropropene	10	U	10	U	10	U	10	U
Dibromochloromethane	10	U	10	U	10	U	10	U
Ethylbenzene	10	U	10	U	10	U	10	U
Methylene chloride	10	U	10	U	10	U	10	U
Styrene	10	U	10	U	10	U	10	U
Tetrachloroethene	10	U	10	U	10	U	10	U
Toluene	8	J	10	U	10	U	10	U
trans-1,3-Dichloropropene	10	U	10	U	10	U	10	U
Trichloroethene	10	U	10	U	10	U	10	U
Vinyl chloride	10	U	10	U	10	U	10	U
Xylene (total)	10	U	10	U	10	U	10	U
Semivolatile organics, µg/L								
1,2,4-Trichlorobenzene	10	U	10	U	10	U	10	U
1,2-Dichlorobenzene	10	U	10	U	10	U	10	U
1,3-Dichlorobenzene	10	U	10	U	10	U	10	U
1,4-Dichlorobenzene	10	U	10	U	10	U	10	U
2,2'-oxybis(1-Chloropropane)	10	U	10	U	10	U	10	U
2,4,5-Trichlorophenol	25	U	25	U	25	U	25	U
2,4,6-Trichlorophenol	10	U	10	U	10	U	10	U
2,4-Dichlorophenol	10	U	10	U	10	U	10	U
2,4-Dimethylphenol	10	U	10	U	10	U	10	U
2,4-Dinitrophenol	25	U	25	U	25	U	25	U
2,4-Dinitrotoluene	10	U	10	U	10	U	10	U
2,6-Dinitrotoluene	10	U	10	U	10	U	10	U
2-Chloronaphthalene	10	U	10	U	10	U	10	U
2-Chlorophenol	10	U	10	U	10	U	10	U
2-Methylnaphthalene	10	U	10	U	10	U	10	U
2-Methylphenol	10	U	10	U	10	U	10	U
2-Nitroaniline	25	U	25	U	25	U	25	U
2-Nitrophenol	10	U	10	U	10	U	10	U

Appendix C
Table C-4. Summary of Surface Water Analytical Results, Groundwater Evaluation, Phase II
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Sample ID	17W02600		17W02700		17W02800		17W02900	
Lab ID	G7582009		G7582008		G7582007		G7582006	
Sampling Date	16-May-95		16-May-95		16-May-95		16-May-95	
3,3'-Dichlorobenzidine	10	U	10	U	10	U	10	U
3-Nitroaniline	25	U	25	U	25	U	25	U
4,6-Dinitro-2-methylphenol	25	U	25	U	25	U	25	U
4-Bromophenyl-phenylether	10	U	10	U	10	U	10	U
4-Chloro-3-methylphenol	10	U	10	U	10	U	10	U
4-Chloroaniline	10	U	10	U	10	U	10	U
4-Chlorophenyl-phenylether	10	U	10	U	10	U	10	U
4-Methylphenol	4	J	10	U	10	U	10	U
4-Nitroaniline	25	U	25	U	25	U	25	U
4-Nitrophenol	25	U	25	U	25	U	25	U
Acenaphthene	10	U	10	U	10	U	10	U
Acenaphthylene	10	U	10	U	10	U	10	U
Anthracene	10	U	10	U	10	U	10	U
Benzo(a)anthracene	10	U	10	U	10	U	10	U
Benzo(a)pyrene	10	U	10	U	10	U	10	U
Benzo(b)fluoranthene	10	U	10	U	10	U	10	U
Benzo(g,h,i)perylene	10	U	10	U	10	U	10	U
Benzo(k)fluoranthene	10	U	10	U	10	U	10	U
bis(2-Chloroethoxy)methane	10	U	10	U	10	U	10	U
bis(2-Chloroethyl)ether	10	U	10	U	10	U	10	U
bis(2-Ethylhexyl)phthalate	10	U	10	U	10	U	10	U
Butylbenzylphthalate	10	U	10	U	10	U	10	U
Carbazole	10	U	10	U	10	U	10	U
Chrysene	10	U	10	U	10	U	10	U
Di-n-butylphthalate	10	U	10	U	10	U	10	U
Di-n-octylphthalate	10	U	10	U	10	U	10	U
Dibenz(a,h)anthracene	10	U	10	U	10	U	10	U
Dibenzofuran	10	U	10	U	10	U	10	U
Diethylphthalate	10	U	10	U	10	U	10	U
Dimethylphthalate	10	U	10	U	10	U	10	U
Fluoranthene	10	U	10	U	10	U	10	U
Fluorene	10	U	10	U	10	U	10	U
Hexachlorobenzene	10	U	10	U	10	U	10	U
Hexachlorobutadiene	10	U	10	U	10	U	10	U
Hexachlorocyclopentadiene	10	U	10	U	10	U	10	U
Hexachloroethane	10	U	10	U	10	U	10	U
Indeno(1,2,3-cd)pyrene	10	U	10	U	10	U	10	U
Isophorone	10	U	10	U	10	U	10	U
N-Nitroso-di-n-propylamine	10	U	10	U	10	U	10	U
N-Nitrosodiphenylamine (1)	10	U	10	U	10	U	10	U
Naphthalene	10	U	10	U	10	U	10	U
Nitrobenzene	10	U	10	U	10	U	10	U
Pentachlorophenol	25	U	25	U	25	U	25	U
Phenanthrene	10	U	10	U	10	U	10	U
Phenol	2	J	10	U	10	U	10	U
Pyrene	10	U	10	U	10	U	10	U
Pesticides/PCBs, µg/L								
4,4'-DDD	0.1	UJ	0.1	UJ	0.1	UJ	0.1	UJ
4,4'-DDE	0.1	UJ	0.1	UJ	0.1	UJ	0.1	UJ
4,4'-DDT	0.1	UJ	0.1	UJ	0.1	UJ	0.1	UJ
Aldrin	0.05	UJ	0.05	UJ	0.05	UJ	0.05	UJ
alpha-BHC	0.05	UJ	0.05	UJ	0.05	UJ	0.05	UJ
alpha-Chlordane	0.05	UJ	0.05	UJ	0.05	UJ	0.05	UJ

Appendix C
Table C-4. Summary of Surface Water Analytical Results, Groundwater Evaluation, Phase II
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Sample ID	17W02600		17W02700		17W02800		17W02900	
Lab ID	G7582009		G7582008		G7582007		G7582006	
Sampling Date	16-May-95		16-May-95		16-May-95		16-May-95	
Aroclor-1016	0.5	UJ	0.5	UJ	0.5	UJ	0.5	UJ
Aroclor-1221	0.5	UJ	0.5	UJ	0.5	UJ	0.5	UJ
Aroclor-1232	0.5	UJ	0.5	UJ	0.5	UJ	0.5	UJ
Aroclor-1242	0.5	UJ	0.5	UJ	0.5	UJ	0.5	UJ
Aroclor-1248	0.5	UJ	0.5	UJ	0.5	UJ	0.5	UJ
Aroclor-1254	0.5	UJ	0.5	UJ	0.5	UJ	0.5	UJ
Aroclor-1260	0.5	UJ	0.5	UJ	0.5	UJ	0.5	UJ
beta-BHC	0.05	UJ	0.05	UJ	0.05	UJ	0.05	UJ
delta-BHC	0.05	UJ	0.05	UJ	0.05	UJ	0.05	UJ
Dieldrin	0.1	UJ	0.1	UJ	0.1	UJ	0.1	UJ
Endosulfan I	0.05	UJ	0.05	UJ	0.05	UJ	0.05	UJ
Endosulfan II	0.1	UJ	0.1	UJ	0.1	UJ	0.1	UJ
Endosulfan sulfate	0.1	UJ	0.1	UJ	0.1	UJ	0.1	UJ
Endrin	0.1	UJ	0.1	UJ	0.1	UJ	0.1	UJ
Endrin aldehyde	0.1	UJ	0.1	UJ	0.1	UJ	0.1	UJ
Endrin ketone	0.1	UJ	0.1	UJ	0.1	UJ	0.1	UJ
gamma-BHC (Lindane)	0.05	UJ	0.05	UJ	0.05	UJ	0.05	UJ
gamma-Chlordane	0.05	UJ	0.05	UJ	0.05	UJ	0.05	UJ
Heptachlor	0.05	UJ	0.05	UJ	0.05	UJ	0.05	UJ
Heptachlor epoxide	0.05	UJ	0.05	UJ	0.05	UJ	0.05	UJ
Methoxychlor	0.5	UJ	0.5	UJ	0.5	UJ	0.5	UJ
Toxaphene	5	UJ	5	UJ	5	UJ	5	UJ
Inorganics, µg/L								
Aluminum	1050		944		418		173	B
Antimony	29.6	U	29.6	U	29.6	U	29.6	U
Arsenic	1.9	U	1.9	U	1.9	U	1.9	U
Barium	31.7	B	26.4	B	367		122	B
Beryllium	0.13	B	0.25	B	0.1	U	0.1	B
Cadmium	3.1	U	3.1	U	3.1	U	3.1	U
Calcium	22100		19300		29500		34800	
Chromium	5.6	U	3.1	U	3.1	U	3.1	U
Cobalt	2.9	U	2.9	U	2.9	U	2.9	U
Copper	5	U	5.8	U	1.4	U	1.4	U
Iron	9400		4000		2140		1790	
Lead	4.9		4.6	U	2.4	B	1.5	U
Magnesium	2020	B	2520	B	4350	B	6230	
Manganese	73.8		30.9		22		16.2	
Mercury	0.12	U	0.12	U	0.12	U	0.12	U
Nickel	14.2	U	14.2	U	14.2	U	14.2	U
Potassium	1930	B	3220	B	1420	B	1140	B
Selenium	2.3	U	2.3	U	2.3	UJ	2.3	U
Silver	2.6	B	2.6	U	2.6	U	2.6	U
Sodium	2180	B	2730	B	7580		14600	
Thallium	18.1	U	1.8	U	1.8	U	1.8	U
Vanadium	9.7	U	6.5	U	2.5	U	2.5	U
Zinc	37.5		52.1		23.5		6.5	U
General Chemistry, mg/L								
Alkalinity as CaCO3	47		39		71		97	
Total Petroleum Hydrocarbons	1		2.8		2.4		2	

Appendix C
Table C-4. Summary of Surface Water Analytical Results, Volatile Organics
Groundwater Evaluation, Phase II
Study Area 17

Naval Training Center
Orlando, FL

Sample ID	17W03001		17W03101		17W03201		17W03301		17W03401	
Lab ID	A8F240177003		A8F240177009		A8F240177010		A8F240177011		A8F240177012	
Sampling Date	23-Jun-98		23-Jun-98		23-Jun-98		23-Jun-98		23-Jun-98	
Volatile organics, µg/L										
1,1,1,2-Tetrachloroethane	5	U	5	U	5	U	5	U	5	U
1,1,1-Trichloroethane	5	U	5	U	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane	5	U	5	U	5	U	5	U	5	U
1,1,2-Trichloroethane	5	U	5	U	5	U	5	U	5	U
1,1-Dichloroethane	5	U	5	U	5	U	5	U	5	U
1,1-Dichloroethene	5	U	5	U	5	U	5	U	5	U
1,1-Dichloropropene	5	U	5	U	5	U	5	U	5	U
1,2,3-Trichlorobenzene	5	U	5	U	5	U	5	U	5	U
1,2,3-Trichloropropane	5	U	5	U	5	U	5	U	5	U
1,2,4-Trichlorobenzene	5	U	5	U	5	U	5	U	5	U
1,2,4-Trimethylbenzene	5	U	5	U	5	U	5	U	5	U
1,2-Dibromo-3-chloropropane	10	U	10	U	10	U	10	U	10	U
1,2-Dibromoethane (EDB)	5	U	5	U	5	U	5	U	5	U
1,2-Dichloroethane	5	U	5	U	5	U	5	U	5	U
1,2-Dichloropropane	5	U	5	U	5	U	5	U	5	U
1,3,5-Trimethylbenzene	5	U	5	U	5	U	5	U	5	U
1,3-Dichloropropane	5	U	5	U	5	U	5	U	5	U
2,2-Dichloropropane	5	U	5	U	5	U	5	U	5	U
2-Chlorotoluene	5	U	5	U	5	U	5	U	5	U
4-Chlorotoluene	5	U	5	U	5	U	5	U	5	U
Benzene	5	U	5	U	5	U	5	U	5	U
Bromobenzene	5	U	5	U	5	U	5	U	5	U
Bromochloromethane	5	U	5	U	5	U	5	U	5	U
Bromodichloromethane	5	U	5	U	5	U	5	U	5	U
Bromoform	5	U	5	U	5	U	5	U	5	U
Bromomethane	10	U	10	U	10	U	10	U	10	U
Carbon tetrachloride	5	U	5	U	5	U	5	U	5	U
Chlorobenzene	5	U	5	U	5	U	5	U	5	U
Chlorodibromomethane	5	U	5	U	5	U	5	U	5	U
Chloroethane	10	U	10	U	10	U	10	U	10	U
Chloroform	5	U	0.92	J	5	U	5	U	5	U
Chloromethane	10	U	10	U	10	U	10	U	10	U
cis-1,2-Dichloroethene	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
cis-1,3-Dichloropropene	5	U	5	U	5	U	5	U	5	U
Dibromomethane	5	U	5	U	5	U	5	U	5	U
Dichlorodifluoromethane	10	U	10	U	10	U	10	U	10	U
Ethylbenzene	5	U	5	U	5	U	5	U	5	U
Hexachlorobutadiene	5	U	5	U	5	U	5	U	5	U
Isopropylbenzene	5	U	5	U	5	U	5	U	5	U
m-Dichlorobenzene	5	U	5	U	5	U	5	U	5	U
m-Xylene & p-Xylene	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Methylene chloride	5	U	5	U	5	U	5	U	5	U
n-Butylbenzene	5	U	5	U	5	U	5	U	5	U
n-Propylbenzene	5	U	5	U	5	U	5	U	5	U
Naphthalene	5	U	5	U	5	U	5	U	5	U
o-Dichlorobenzene	5	U	5	U	5	U	5	U	5	U
o-Xylene	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
p-Dichlorobenzene	5	U	5	U	5	U	5	U	5	U
p-Isopropyltoluene	5	U	5	U	5	U	5	U	5	U
sec-Butylbenzene	5	U	5	U	5	U	5	U	5	U
Styrene	5	U	5	U	5	U	5	U	5	U
tert-Butylbenzene	5	U	5	U	5	U	5	U	5	U
Tetrachloroethene	5	U	5	U	5	U	5	U	5	U
Toluene	5.2		20		17		18		25	
trans-1,2-Dichloroethene	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
trans-1,3-Dichloropropene	5	U	5	U	5	U	5	U	5	U
Trichloroethene	1.2	J	5	U	5	U	5	U	5	U
Trichlorofluoromethane	10	U	10	U	10	U	10	U	10	U
Vinyl chloride	10	U	0.78	J	10	U	10	U	10	U

TABLE C-5

SUMMARY OF SEDIMENT ANALYTICAL RESULTS

Appendix C
Table C-5. Summary of Sediment Analytical Results
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Sample ID	17D02600	17D02700	17D02800	17D02900	17D03001	17D03101	17D03201	17D03301	17D03401
Lab ID	G7678009	G7678008	G7678007	G7678006	A8F240177004	A8F240177013	A8F240177014	A8F240177015	A8F240177016
Sampling Date	26-May-95	26-May-95	26-May-95	26-May-95	23-Jun-98	23-Jun-98	23-Jun-98	23-Jun-98	23-Jun-98
Volatile organics, µg/kg									
1,1,1-Trichloroethane	14 U	16 U	25 U	17 U	6.3 U	7.3 U	7.9 U	11 U	6.5 U
1,1,2,2-Tetrachloroethane	14 U	16 U	25 U	17 U	6.3 U	7.3 U	7.9 U	11 U	6.5 U
1,1,2-Trichloroethane	14 U	16 U	25 U	17 U	6.3 U	7.3 U	7.9 U	11 U	6.5 U
1,1-Dichloroethane	14 U	16 U	25 U	17 U	6.3 U	7.3 U	7.9 U	11 U	6.5 U
1,1-Dichloroethene	14 U	16 U	25 U	17 U	6.3 U	7.3 U	7.9 U	11 U	6.5 U
1,2-Dichloroethane	14 U	16 U	25 U	17 U	6.3 U	7.3 U	7.9 U	11 U	6.5 U
1,2-Dichloroethene (total)	14 U	16 U	25 U	17 U	6.3 U	7.3 U	7.9 U	11 U	6.5 U
1,2-Dichloropropane	14 U	16 U	25 U	17 U	6.3 U	7.3 U	7.9 U	11 U	6.5 U
2-Butanone	14 U	6 J	25 U	17 U	25 U	29 U	32 U	43 U	26 U
2-Hexanone	14 U	16 U	25 U	17 U	25 U	29 U	32 U	43 U	26 U
4-Methyl-2-pentanone	14 U	16 U	25 U	17 U	25 U	29 U	32 U	43 U	26 U
Acetone	9 J	21	30	14 J	25 U	29 U	32 U	43 U	26 U
Benzene	14 U	16 U	25 U	17 U	6.3 U	7.3 U	7.9 U	11 U	6.5 U
Bromodichloromethane	14 U	16 U	25 U	17 U	6.3 U	7.3 U	7.9 U	11 U	6.5 U
Bromoform	14 U	16 U	25 U	17 U	6.3 U	7.3 U	7.9 U	11 U	6.5 U
Bromomethane	14 U	16 U	25 U	17 U	13 U	15 U	16 U	22 U	13 U
Carbon disulfide	14 U	16 U	25 U	17 U	6.3 U	7.3 U	7.9 U	11 U	6.5 U
Carbon tetrachloride	14 U	16 U	25 U	17 U	6.3 U	7.3 U	7.9 U	11 U	6.5 U
Chlorobenzene	14 U	16 U	25 U	17 U	6.3 U	7.3 U	7.9 U	11 U	6.5 U
Chloroethane	14 U	16 U	25 U	17 U	13 U	15 U	16 U	22 U	13 U
Chloroform	14 U	16 U	25 U	17 U	6.3 U	7.3 U	7.9 U	11 U	6.5 U
Chloromethane	14 U	16 U	25 U	17 U	13 U	15 U	16 U	22 U	13 U
cis-1,3-Dichloropropene	14 U	16 U	25 U	17 U	6.3 U	7.3 U	7.9 U	11 U	6.5 U
Dibromochloromethane	14 U	16 U	25 U	17 U	6.3 U	7.3 U	7.9 U	11 U	6.5 U
Ethylbenzene	14 U	16 U	25 U	17 U	6.3 U	7.3 U	7.9 U	11 U	6.5 U
Methylene chloride	14 U	16 U	25 U	17 U	4.4 J	4.8 J	5.1 J	6 J	3.6 J
Styrene	14 U	16 U	25 U	17 U	6.3 U	7.3 U	7.9 U	11 U	6.5 U
Tetrachloroethene	14 U	16 U	25 U	17 U	6.3 U	7.3 U	7.9 U	11 U	6.5 U
Toluene	14 U	16 U	25 U	17 U	6.3 U	7.3 U	7.9 U	1 J	0.51 J
trans-1,3-Dichloropropene	14 U	16 U	25 U	17 U	6.3 U	7.3 U	7.9 U	11 U	6.5 U
Trichloroethene	14 U	16 U	25 U	17 U	6.3 U	7.3 U	7.9 U	11 U	6.5 U
Vinyl chloride	14 U	16 U	25 U	17 U	13 U	0.72 J	16 U	22 U	13 U
Xylene (total)	14 U	16 U	25 U	17 U	6.3 U	7.3 U	7.9 U	11 U	6.5 U
Semivolatile organics, µg/kg									

Appendix C
Table C-5 Summary of Sediment Analytical Results
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Sample ID	17D02600	17D02700	17D02800	17D02900	17D03001	17D03101	17D03201	17D03301	17D03401
Lab ID	G7678009	G7678008	G7678007	G7678006	A8F240177004	A8F240177013	A8F240177014	A8F240177015	A8F240177016
Sampling Date	26-May-95	26-May-95	26-May-95	26-May-95	23-Jun-98	23-Jun-98	23-Jun-98	23-Jun-98	23-Jun-98
1,2,4-Trichlorobenzene	420 U	460 U	690 U	520 UR	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	420 U	460 U	690 U	520 UR	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	420 U	460 U	690 U	520 UR	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	420 U	460 U	690 U	520 UR	NA	NA	NA	NA	NA
2,2'-oxybis(1-Chloropropane)	420 U	460 U	690 U	520 UR	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	1000 U	1200 U	1700 U	1300 UR	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	420 U	460 U	690 U	520 UR	NA	NA	NA	NA	NA
2,4-Dichlorophenol	420 U	460 U	690 U	520 UR	NA	NA	NA	NA	NA
2,4-Dimethylphenol	420 U	460 U	690 U	520 UR	NA	NA	NA	NA	NA
2,4-Dinitrophenol	1000 U	1200 U	1700 U	1300 UR	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	420 U	460 U	690 U	520 UR	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	420 U	460 U	690 U	520 UR	NA	NA	NA	NA	NA
2-Chloronaphthalene	420 U	460 U	690 U	520 UR	NA	NA	NA	NA	NA
2-Chlorophenol	420 U	460 U	690 U	520 UR	NA	NA	NA	NA	NA
2-Methylnaphthalene	420 U	460 U	690 U	520 UR	NA	NA	NA	NA	NA
2-Methylphenol	420 U	460 U	690 U	520 UR	NA	NA	NA	NA	NA
2-Nitroaniline	1000 U	1200 U	1700 U	1300 UR	NA	NA	NA	NA	NA
2-Nitrophenol	420 U	460 U	690 U	520 UR	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	420 U	460 U	690 U	520 UR	NA	NA	NA	NA	NA
3-Nitroaniline	1000 U	1200 U	1700 U	1300 UR	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	1000 U	1200 U	1700 U	1300 UR	NA	NA	NA	NA	NA
4-Bromophenyl-phenylether	420 U	460 U	690 U	520 UR	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	420 U	460 U	690 U	520 UR	NA	NA	NA	NA	NA
4-Chloroaniline	420 U	460 U	690 U	520 UR	NA	NA	NA	NA	NA
4-Chlorophenyl-phenylether	420 U	460 U	690 U	520 UR	NA	NA	NA	NA	NA
4-Methylphenol	420 U	460 U	690 U	520 UR	NA	NA	NA	NA	NA
4-Nitroaniline	1000 U	1200 U	1700 U	1300 UR	NA	NA	NA	NA	NA
4-Nitrophenol	1000 U	1200 U	1700 U	1300 UR	NA	NA	NA	NA	NA
Acenaphthene	420 U	460 U	410 J	520 UR	NA	NA	NA	NA	NA
Acenaphthylene	420 U	460 U	690 U	520 UR	NA	NA	NA	NA	NA
Anthracene	420 U	460 U	310 J	520 UR	NA	NA	NA	NA	NA
Benzo(a)anthracene	420 U	460 U	1000	520 UR	NA	NA	NA	NA	NA
Benzo(a)pyrene	420 U	460 U	690 U	520 UR	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	420 U	460 U	660 J	520 UR	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	420 U	460 U	690 U	520 UR	NA	NA	NA	NA	NA

Appendix C
Table C-5. Summary of Sediment Analytical Results
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Sample ID	17D02600		17D02700		17D02800		17D02900		17D03001		17D03101		17D03201		17D03301		17D03401	
Lab ID	G7678009		G7678008		G7678007		G7678006		A8F240177004		A8F240177013		A8F240177014		A8F240177015		A8F240177016	
Sampling Date	26-May-95		26-May-95		26-May-95		26-May-95		23-Jun-98		23-Jun-98		23-Jun-98		23-Jun-98		23-Jun-98	
Benzo(k)fluoranthene	420	U	460	U	590	J	520	UR	NA		NA		NA		NA		NA	
bis(2-Chloroethoxy)methane	420	U	460	U	690	U	520	UR	NA		NA		NA		NA		NA	
bis(2-Chloroethyl)ether	420	U	460	U	690	U	520	UR	NA		NA		NA		NA		NA	
bis(2-Ethylhexyl)phthalate	420	U	460	U	630	J	520	UR	NA		NA		NA		NA		NA	
Butylbenzylphthalate	420	U	460	U	690	U	520	UR	NA		NA		NA		NA		NA	
Carbazole	420	U	460	U	690	U	520	UR	NA		NA		NA		NA		NA	
Chrysene	420	U	460	U	820		520	UR	NA		NA		NA		NA		NA	
Di-n-butylphthalate	420	U	460	U	690	U	520	UR	NA		NA		NA		NA		NA	
Di-n-octylphthalate	420	U	460	U	690	U	520	UR	NA		NA		NA		NA		NA	
Dibenz(a,h)anthracene	420	U	460	U	210	J	520	UR	NA		NA		NA		NA		NA	
Dibenzofuran	420	U	460	U	690	U	520	UR	NA		NA		NA		NA		NA	
Diethylphthalate	420	U	460	U	690	U	520	UR	NA		NA		NA		NA		NA	
Dimethylphthalate	420	U	460	U	690	U	520	UR	NA		NA		NA		NA		NA	
Fluoranthene	420	U	150	J	2100		520	UR	NA		NA		NA		NA		NA	
Fluorene	420	U	460	U	320	J	520	UR	NA		NA		NA		NA		NA	
Hexachlorobenzene	420	U	460	U	690	U	520	UR	NA		NA		NA		NA		NA	
Hexachlorobutadiene	420	U	460	U	690	U	520	UR	NA		NA		NA		NA		NA	
Hexachlorocyclopentadiene	420	U	460	U	690	U	520	UR	NA		NA		NA		NA		NA	
Hexachloroethane	420	U	460	U	690	U	520	UR	NA		NA		NA		NA		NA	
Indeno(1,2,3-cd)pyrene	420	U	460	U	690	U	520	UR	NA		NA		NA		NA		NA	
Isophorone	420	U	460	U	690	U	520	UR	NA		NA		NA		NA		NA	
N-Nitroso-di-n-propylamine	420	U	460	U	690	U	520	UR	NA		NA		NA		NA		NA	
N-Nitrosodiphenylamine (1)	420	U	460	U	690	U	520	UR	NA		NA		NA		NA		NA	
Naphthalene	420	U	460	U	690	U	520	UR	NA		NA		NA		NA		NA	
Nitrobenzene	420	U	460	U	690	U	520	UR	NA		NA		NA		NA		NA	
Pentachlorophenol	1000	U	1200	U	1700	U	1300	UR	NA		NA		NA		NA		NA	
Phenanthrene	420	U	460	U	700		520	UR	NA		NA		NA		NA		NA	
Phenol	420	U	460	U	690	U	520	UR	NA		NA		NA		NA		NA	
Pyrene	420	U	460	U	540	J	520	UR	NA		NA		NA		NA		NA	
Pesticides/PCBs, µg/kg																		
4,4'-DDD	4.2	U	19	J	990	DJ	24	NJ	NA		NA		NA		NA		NA	
4,4'-DDE	4.2	U	13		130	J	15		NA		NA		NA		NA		NA	
4,4'-DDT	4.2	U	4.5	U	60	U	10	U	NA		NA		NA		NA		NA	
Aldrin	2.2	U	2.3	U	60	U	2.7	U	NA		NA		NA		NA		NA	
alpha-BHC	2.2	U	2.3	U	31	U	2.7	U	NA		NA		NA		NA		NA	

Appendix C
Table C-5. Summary of Sediment Analytical Results
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Sample ID	17D02600	17D02700	17D02800	17D02900	17D03001	17D03101	17D03201	17D03301	17D03401
Lab ID	G7678009	G7678008	G7678007	G7678006	A8F240177004	A8F240177013	A8F240177014	A8F240177015	A8F240177016
Sampling Date	26-May-95	26-May-95	26-May-95	26-May-95	23-Jun-98	23-Jun-98	23-Jun-98	23-Jun-98	23-Jun-98
alpha-Chlordane	2.2 U	5.4	890 CD	14	NA	NA	NA	NA	NA
Aroclor-1016	42 U	45 U	600 U	52 U	NA	NA	NA	NA	NA
Aroclor-1221	86 U	92 U	1200 U	110 U	NA	NA	NA	NA	NA
Aroclor-1232	42 U	45 U	600 U	52 U	NA	NA	NA	NA	NA
Aroclor-1242	42 U	45 U	600 U	52 U	NA	NA	NA	NA	NA
Aroclor-1248	42 U	45 U	600 U	52 U	NA	NA	NA	NA	NA
Aroclor-1254	42 U	45 U	600 U	52 U	NA	NA	NA	NA	NA
Aroclor-1260	42 U	45 U	600 U	52 U	NA	NA	NA	NA	NA
beta-BHC	2.2 U	2.3 U	31 U	2.7 U	NA	NA	NA	NA	NA
delta-BHC	2.2 U	2.3 U	31 U	2.7 U	NA	NA	NA	NA	NA
Dieldrin	4.2 U	4.5 U	60 U	3.3 J	NA	NA	NA	NA	NA
Endosulfan I	2.2 U	2.3 U	31 U	2.7 U	NA	NA	NA	NA	NA
Endosulfan II	4.2 U	4.5 U	60 U	5.2 U	NA	NA	NA	NA	NA
Endosulfan sulfate	4.2 U	4.5 U	60 U	5.2 U	NA	NA	NA	NA	NA
Endrin	4.2 U	4.5 U	60 U	5.2 U	NA	NA	NA	NA	NA
Endrin aldehyde	4.2 U	4.5 U	60 U	5.2 U	NA	NA	NA	NA	NA
Endrin ketone	4.2 U	4.5 U	60 U	5.2 U	NA	NA	NA	NA	NA
gamma-BHC (Lindane)	2.2 U	2.3 U	31 U	2.7 U	NA	NA	NA	NA	NA
gamma-Chlordane	2.2 U	11	1800 CD	41	NA	NA	NA	NA	NA
Heptachlor	2.2 U	2.3 U	31 U	2.7 U	NA	NA	NA	NA	NA
Heptachlor epoxide	2.2 U	2.3 U	150 U	5.2 U	NA	NA	NA	NA	NA
Methoxychlor	22 U	23 U	310 U	27 U	NA	NA	NA	NA	NA
Toxaphene	220 U	230 U	3100 U	270 U	NA	NA	NA	NA	NA
Inorganics, µg/kg									
Aluminum	520	2480	2970	1540	NA	NA	NA	NA	NA
Antimony	8.2 U	9.2 U	14.8 U	10.1 U	NA	NA	NA	NA	NA
Arsenic	1.5 B	1.6 J	3.5 J	1.5 J	NA	NA	NA	NA	NA
Barium	1.7 B	9.2 B	21.4 B	6.8 B	NA	NA	NA	NA	NA
Beryllium	0.03 U	0.11 B	0.22 B	0.15 B	NA	NA	NA	NA	NA
Cadmium	0.86 U	0.96 U	1.6 U	1.4 B	NA	NA	NA	NA	NA
Calcium	112 B	353 B	12600	14500	NA	NA	NA	NA	NA
Chromium	0.95 B	3.9	8.6	4.6	NA	NA	NA	NA	NA
Cobalt	0.8 U	0.9 U	2.3 B	0.98 U	NA	NA	NA	NA	NA
Copper	1.1 B	4.2 B	11.1 B	3.9 B	NA	NA	NA	NA	NA
Iron	232	1470	2500	1250	NA	NA	NA	NA	NA

Appendix C
Table C-5. Summary of Sediment Analytical Results
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Sample ID	17D02600	17D02700	17D02800	17D02900	17D03001	17D03101	17D03201	17D03301	17D03401
Lab ID	G7678009	G7678008	G7678007	G7678006	A8F240177004	A8F240177013	A8F240177014	A8F240177015	A8F240177016
Sampling Date	26-May-95	26-May-95	26-May-95	26-May-95	23-Jun-98	23-Jun-98	23-Jun-98	23-Jun-98	23-Jun-98
Lead	0.89 J	15.1 J	45.2 J	15.8 J	NA	NA	NA	NA	NA
Magnesium	12 B	80.3 B	191 B	141 B	NA	NA	NA	NA	NA
Manganese	0.3 B	1.4 B	4.7 B	2.1 B	NA	NA	NA	NA	NA
Mercury	0.03 U	0.09	0.27	0.06 B	NA	NA	NA	NA	NA
Nickel	3.9 U	4.4 U	7.1 U	4.8 U	NA	NA	NA	NA	NA
Potassium	122 U	138 U	222 U	151 U	NA	NA	NA	NA	NA
Selenium	0.63 U	0.71 U	1.1 U	0.78 U	NA	NA	NA	NA	NA
Silver	0.72 U	0.81 U	1.3 U	0.88 U	NA	NA	NA	NA	NA
Sodium	4.7 U	10.1 B	23.5 B	22.3 B	NA	NA	NA	NA	NA
Thallium	0.5 U	0.56 U	0.91 U	0.61 U	NA	NA	NA	NA	NA
Vanadium	2.5 B	4.7 B	10.2 B	6.1 B	NA	NA	NA	NA	NA
Zinc	6.2	30.5	78.5	35	NA	NA	NA	NA	NA
General Chemistry, mg/kg									
Total Organic Carbon	2130	7800	24400	9770	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons	5.5 U	73.5	892	162	NA	NA	NA	NA	NA

APPENDIX D

TECHNICAL MEMORANDUM
GEOPHYSICAL SURVEY RESULTS

TECHNICAL MEMORANDUM
GEOPHYSICAL SURVEYS
STUDY AREA 17

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

1.0 INTRODUCTION. The following is a summary of the significant findings of the geophysical surveys which took place at Study Area 17 between March 3 and April 14, 1995, at Naval Training Center in Orlando, Orange County, Florida (Figure 1). The geophysical surveys were conducted to evaluate potential subsurface debris disposal and to aid in clearing utilities for the subsurface investigations. The techniques used were magnetometry, terrain conductivity (TC), and ground-penetrating radar (GPR).

2.0 GEOPHYSICAL TECHNIQUES. The magnetic method is a versatile geophysical technique used for evaluating shallow geologic structures and for locating buried man-made objects and buried debris by mapping local distortions in the earth's magnetic field produced by buried magnetic objects (steel and other magnetic materials). Vertical gradient measurements of the earth's magnetic field are often taken during environmental magnetic surveys, as they are more sensitive to the presence of near-surface metal objects than total field values alone.

TC surveys, also referred to as EMI (electro-magnetic induction) surveys, have traditionally been used in mineral exploration for tracing conductive ore bodies (i.e., massive sulfides). More recently, conductivity surveys have been used in environmental studies for mapping buried debris and former structures, and for tracing conductive contaminant plumes in groundwater. TC instruments record two parameters, the quadrature phase and the in-phase components of an induced magnetic field. The quadrature-phase component is a measure of the ground conductivity value expressed in millimhos per meter. The in-phase component is significantly more sensitive to metallic objects and is useful for looking for buried tanks and drums and other man-made objects.

The GPR technique uses high-frequency radio waves to determine the presence of subsurface objects and structures. The radio wave energy is reflected from surfaces where there is a contrast in the electrical properties of subsurface materials, such as naturally occurring geologic horizons or man-made objects (e.g., buried utilities, tanks, drums). Typical applications for GPR include mapping buried utilities, and delineating the boundaries of buried hazardous waste materials and abandoned landfills.

3.0 RESULTS. Geophysical surveys included GPR surveys at Buildings 7178, 7190, and 7191. The GPR survey at Building 7178 was to determine the presence of an abandoned UST. The GPR surveys at Buildings 7190 and 7191 were to confirm the removal of former USTs. In addition, a combined magnetometer and TC survey, followed by a confirmatory GPR survey, was completed in the field south of Building 7193 to locate potential abandoned USTs and/or the presence and extent of releases of waste materials previously stored on site. These individual efforts are discussed separately below.

3.1 GPR SURVEYS AT BUILDINGS 7178, 7190 and 7191. GPR surveys were conducted on April 6 and April 10, 1995, around the building perimeters of Buildings 7178, 7190, and 7191. Generally, the procedure was to complete continuous traverse lines along the former building foundation in the area of interest and to add parallel traverse lines at distances of 5, 10, and 15 feet away from the foundation to map potential USTs. No USTs were mapped during this field effort. Figure 2 shows the buildings and the approximate locations of the traverses completed, along with some of the more obvious features that were mapped (buried pipe, a water main, and shallow buried cable).

3.2 MAGNETOMETER, TC, and GPR SURVEYS SOUTH OF BUILDING 7193. A geophysical grid with an arbitrary origin was established in the grassy field south and west of Building 7193 on March 3, 1995. Magnetometer and TC surveys were completed concurrently on March 13, 1995, in an area 250 feet long and 130 feet wide. A total of 325 data points were acquired on a 10-foot by 10-foot measurement grid with each instrument. Contour data is presented as Figures 3 through 5. Figure 3 presents the vertical magnetic gradient contours, and Figures 4 and 5 present the quadrature (conductivity) and in-phase (equivalent to a metal detector) contours of the magnetic field induced by the transmitter of the TC instrument. The data indicate a significant magnetic anomaly in the central portion of the survey area with a corresponding TC anomaly. The anomaly is centered at (arbitrary) grid coordinates X=950E and Y=890N. GPR traverses were completed in both directions in the vicinity of the anomaly (Figure 6). The geophysical data are consistent with a large buried metal object, possibly a UST.

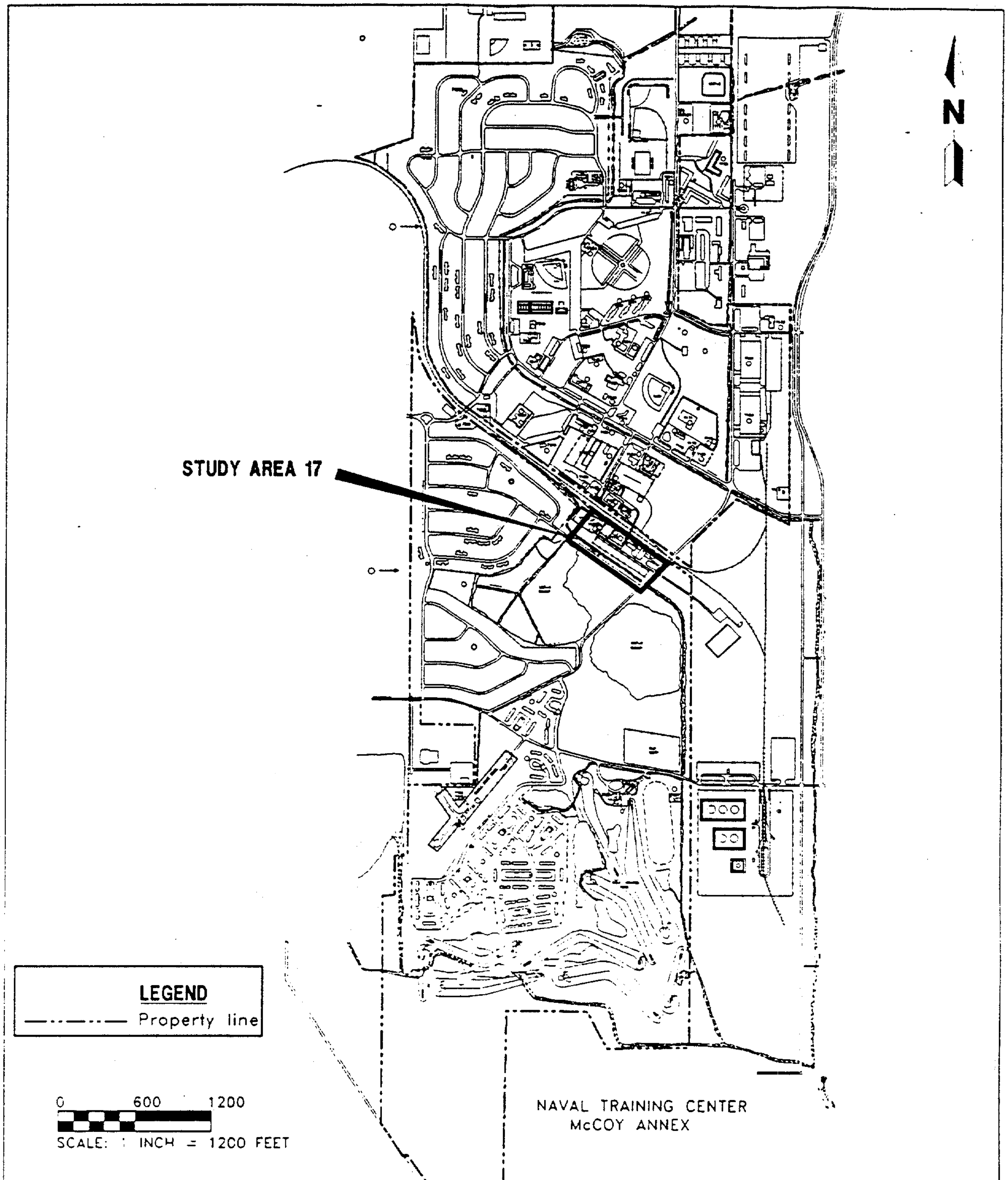

FIGURE 1
STUDY AREA LOCATION

GEOPHYSICAL SURVEY
STUDY AREA 17

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

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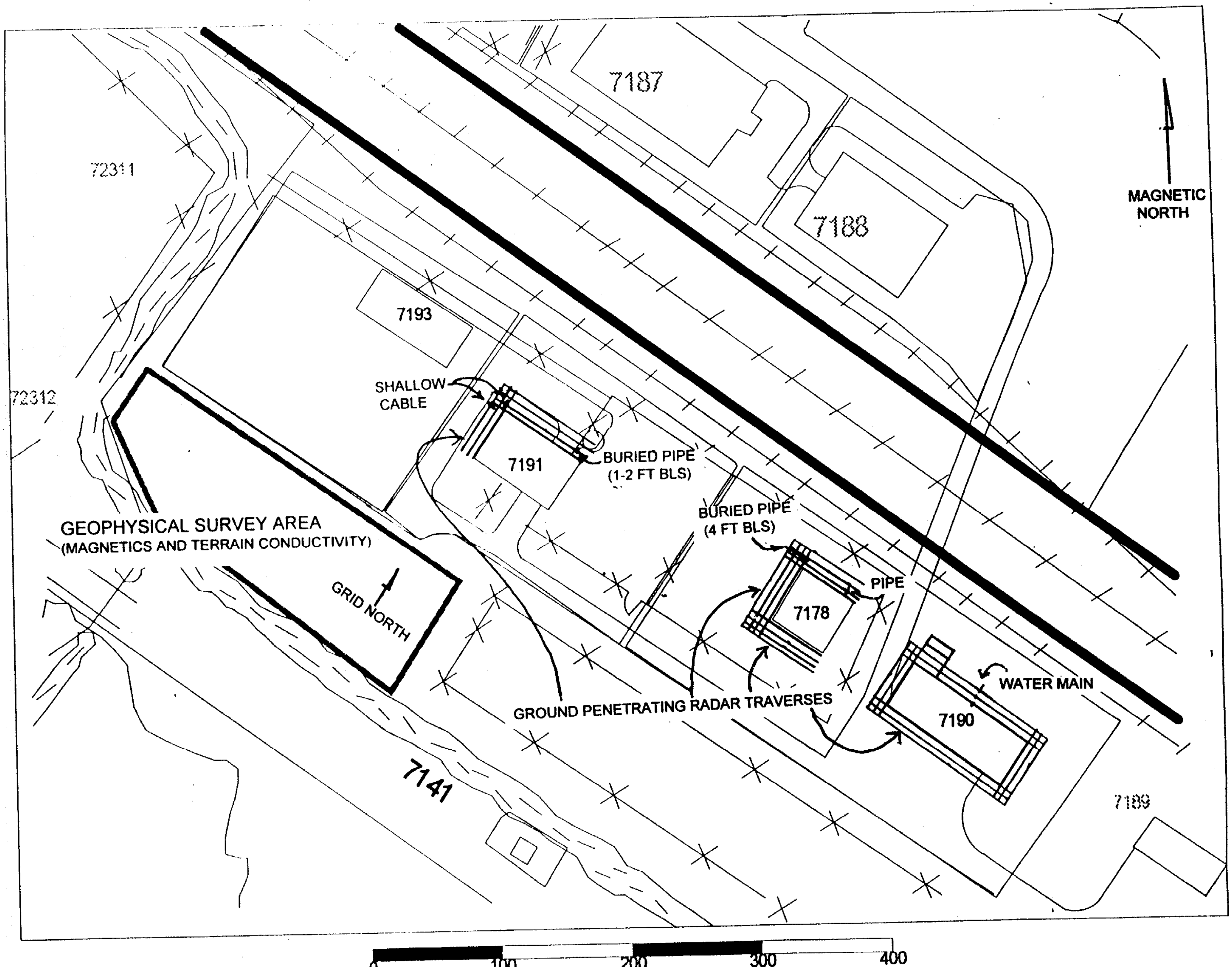
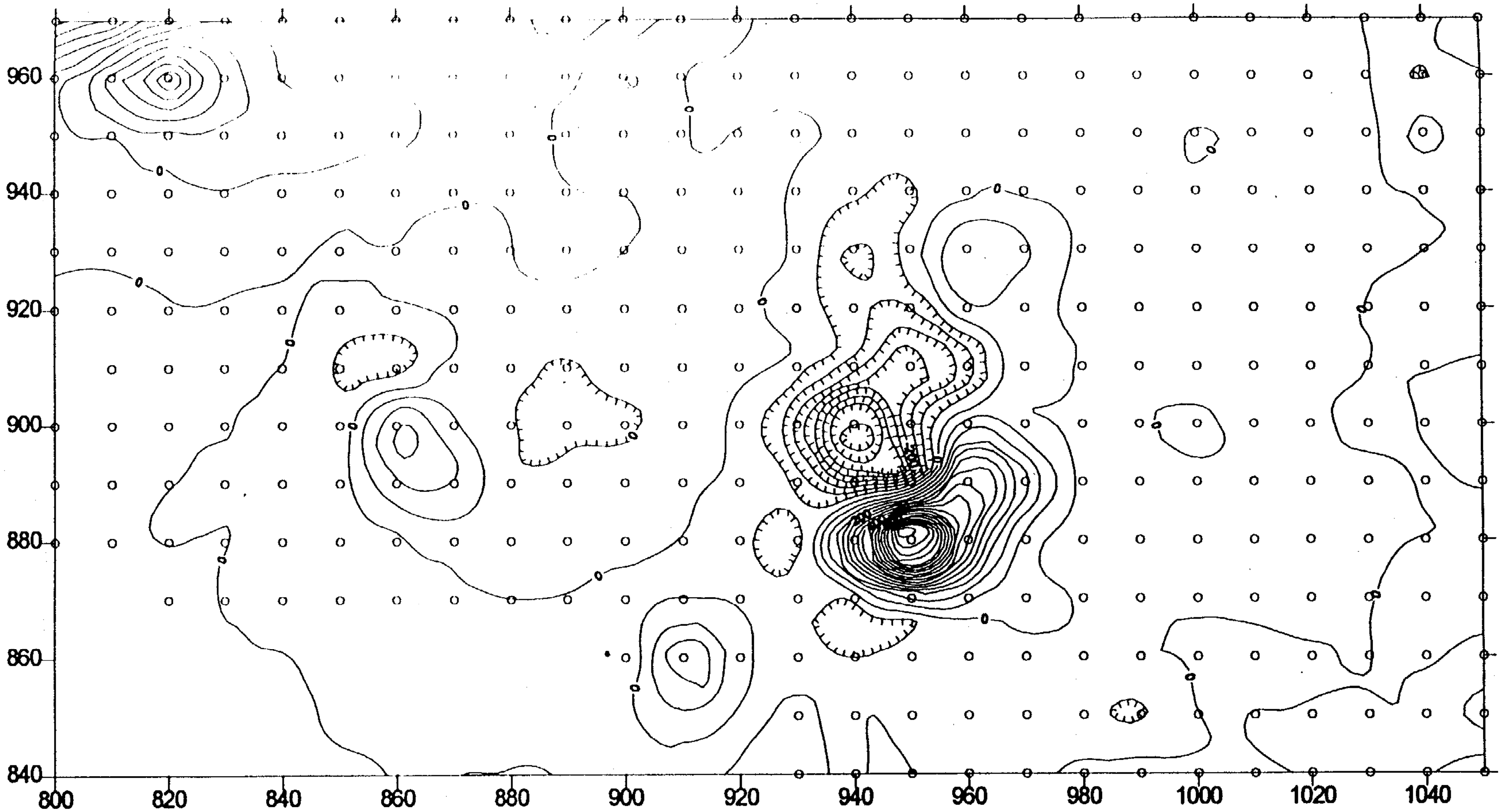


FIGURE 2
STUDY AREA 17
GEOPHYSICAL SURVEY LOCATIONS



Note: Contour Interval = 50 gammas

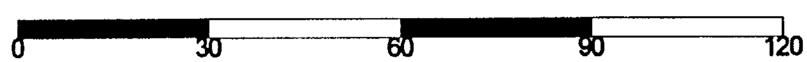
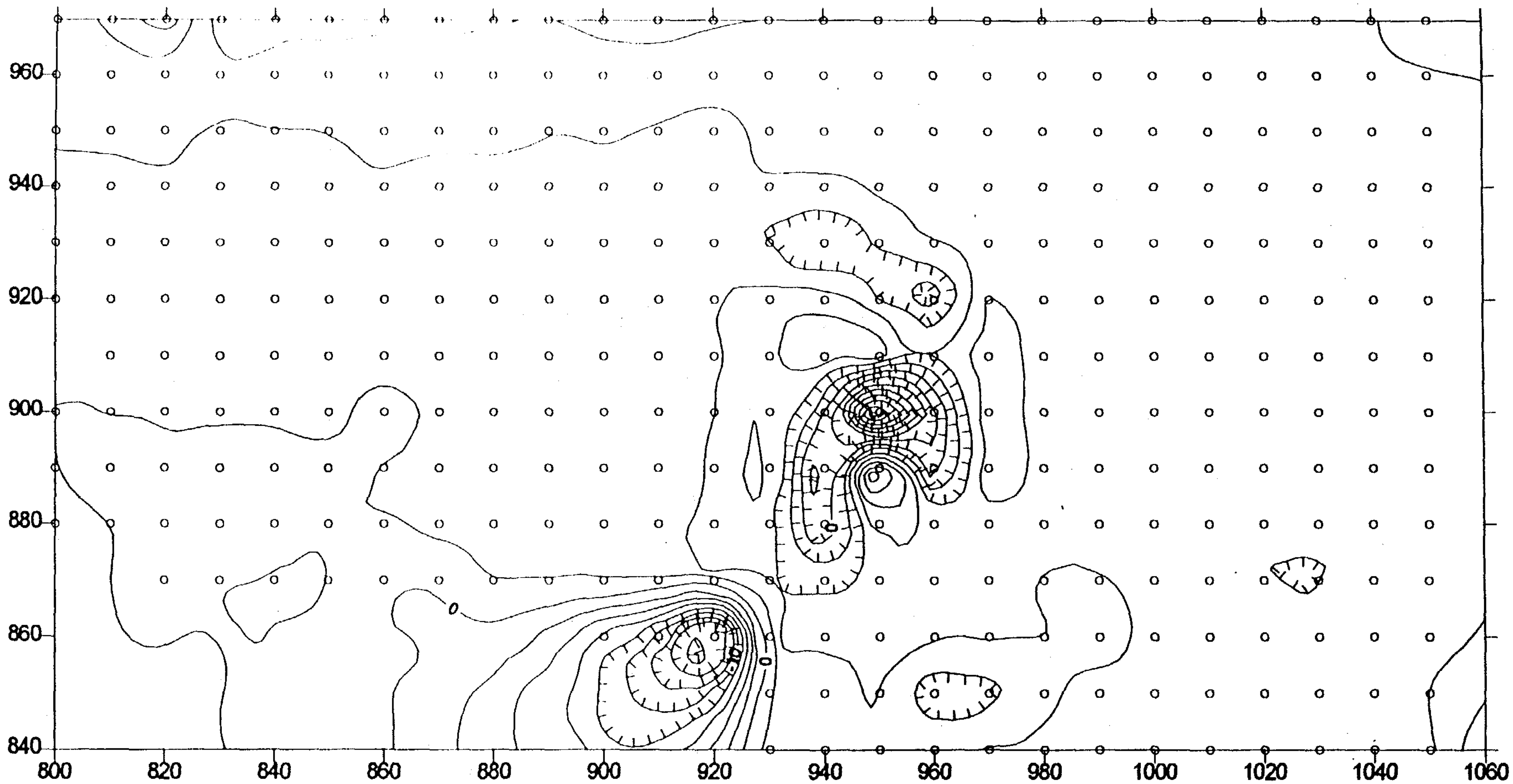
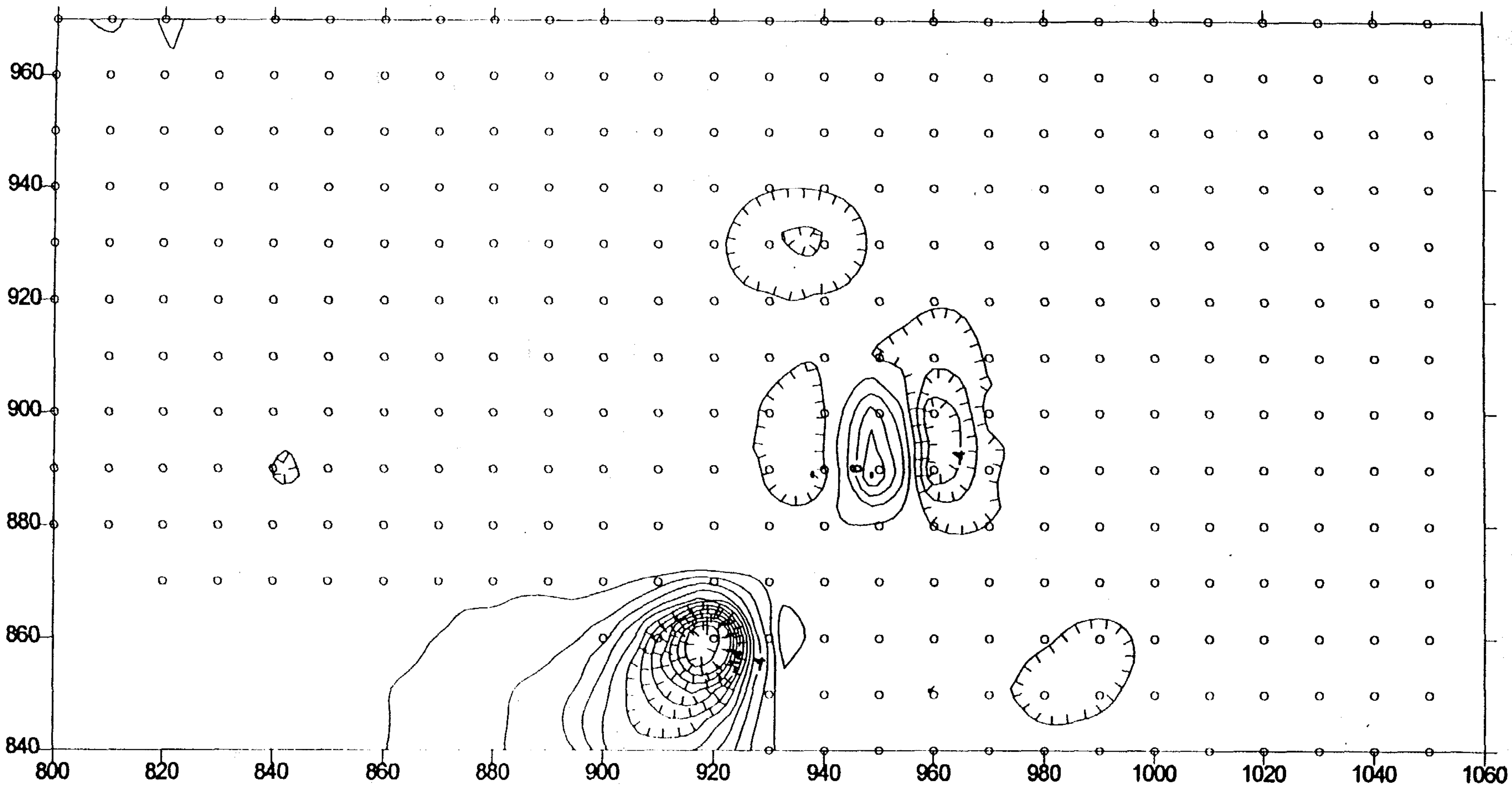


FIGURE 3
STUDY AREA 17
VERTICAL GRADIENT CONTOURS



Note: Contour Interval = 2 millimhos per meter

FIGURE 4
STUDY AREA 17
QUADRATURE (TC) CONTOURS



Note: Contour Interval = 2 (dimensionless)

FIGURE 5
STUDY AREA 17
INPHASE (TC) CONTOURS

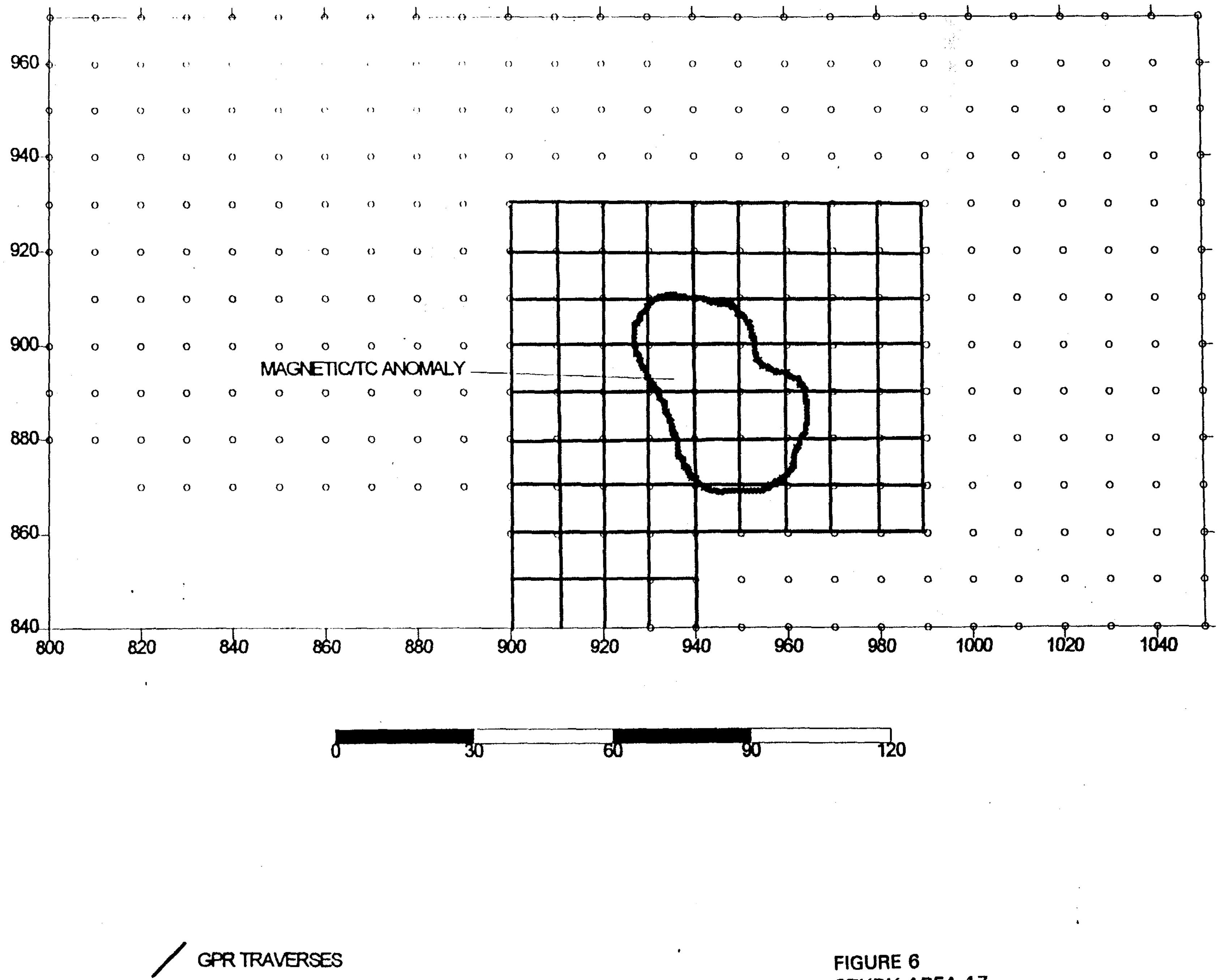


FIGURE 6
STUDY AREA 17
MAGNETOMETER, TC, AND GPR SURVEYS

APPENDIX E

TECHNICAL MEMORANDUM
TEST PITTING RESULTS

Tech Memo

To: Rick Allen
cc: John Kaiser

From: Marc Hawes

Date: September 11, 1996

Subject: Test Pit Activities on September 6, 1996

The following pages summarize the test pit excavation events that took place on September 6, 1996 and the anomalies encountered at those sites. A photographic log was taken and inserted into the back of this memo. Site maps are also present as Figures 1,2 & 3.

Introduction

Following review of the results of geophysical surveys conducted during the screening investigations at study areas (SA) 17, 22 & 44, ABB-ES recommended and the NTC Orlando Partnering Team (OPT) concurred that the source for several anomalies needed to be identified.

On September 6, 1996, ABB-ES employed the services of Groundwater Protection, Inc. to excavate small test pits in the areas of the anomalies to assist in identifying them. The Groundwater Protection, Inc. crew consisted of a certified backhoe operator, Kevin Pelkey and a helper, Robert Detweiler. The backhoe that Mr. Pelkey operated was a John Deere 310D backhoe.

A decontamination pad was built for decontaminating the back hoe and Investigative Derived Waste (IDW) was contained in 55-gallon drums (Photographs 1 & 2). All personnel on site were 40-hour OSHA 29 CFR 1910.120 certified and were given a health and safety briefing. At each location, the back hoe operator was instructed to remove a trench of 6 inches of soil at a time (Photograph 3). Each bucket of soil was analyzed for volatile organic vapors with a flame-ionization detector and the results recorded in a logbook (Photograph 4).

Study Area 44

Two anomalies were investigated at SA-44 between Building 2720 and Building 2723 at the Naval Training Center, Orlando, Orange County, Florida. Site map, Figure 1 shows the locations of the two anomalies. The area was cordoned off with caution tape to form the exclusion zone.

The first anomaly, 44TP1 was located approximately 4 feet from the southwest corner of the existing basketball court and 6 feet south of monitoring well, OLD-44-07 (Figure 1). A concrete pad was located 1 foot below level surface (bls). The pad was approximately 18 inches wide by 8 inches thick. The length of the concrete pad was not determined. The size of the excavation was approximately 8 feet wide by 10 feet long by 1 foot deep (Photographs 5). No volatile organic vapors were detected and the anomaly was identified as non-hazardous. The test pit was backfilled with the original soil (Photograph 6).

The second anomaly, 44TP2 was located approximately 10 feet southeast of monitoring well OLD-44-07 and 22 feet south of the basketball court (Figure 1). Within the first 6 inches of trenching, a three foot metal pipe, 2-inches in diameter was located (Photograph 7). The excavation continued and a concrete pad was found at 1 foot bls, resembling the concrete pad found at 44TP1. The length of the pad was not determined. The size of the excavation was approximately 5 feet by 5 feet by 1 foot deep (Photograph 8). No volatile organic vapors were detected and the anomalies were identified as non-hazardous. The test pit was backfilled with the original soil. The metal pipe was removed from the test pit, set aside and reported to the NTC Orlando Environmental Coordinator at the Public Works office.

Study Area 17

One large anomaly needed to be identified at SA-17 southwest of building 7191 at McCoy Annex, Naval Training Center, Orlando, Orange County, Florida. The area of excavation, shown in Figure 2, was established from the geophysical investigation grid coordinates between 930E - 970E, 870N - 910N.

The first excavation, 17TP1, began at 1000E, 850N where metal debris was found on the surface (Figure 2). The excavation was clean to a depth of 3 feet. A second excavation, 17TP1a, began at 980E, 870N, just outside the anomaly boundaries (Figure 2). The excavation was also clean to a depth of 4 feet, where the water table was encountered.

The third excavation, 17TP1b, was performed inside the anomaly boundaries at 945E, 880N (Figure 2). Methane was encountered between 1 foot of excavation and 5 feet of excavation at concentrations up to 800 parts per million (ppm). Between the depths of 3 feet and 5 feet, pieces of scrap metal and wood were encountered (Photograph 9 & 10). The trench was approximately 6 feet long, 2 feet wide and 5 feet deep. The water table was not encountered.

Another trench within the anomaly grid system was begun to confirm that the anomaly was only scrap metal and wood. The next trench, 17TP1c, was performed at 960E, 900N (Figure 2). At a depth of 3.5 feet, large pieces of wood and metal were encountered, as well as, pieces of barbed wire. The water table poured into the trench when the bucket was pulled up from a depth of 3 - 3.5 feet. The trench was approximately 6 feet long, 2 feet wide and 3.5 feet deep (Photograph 11).

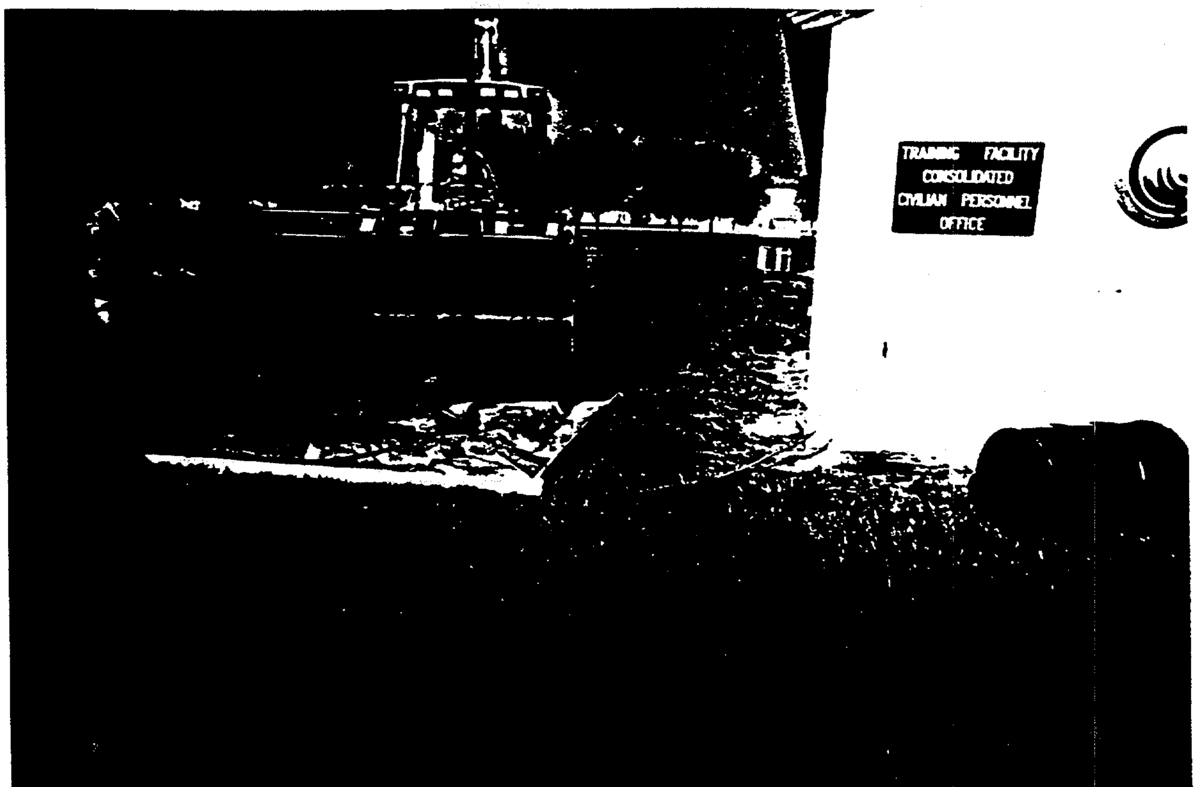
Two more trenches, 17TP1d and 17TP1e, were excavated parallel to 17TP1c, four feet on center from one another (Figure 2). At location 17TP1d and 17TP1e and at a depth of 3 feet, yellow, elliptical, 1/2 inch to 3/4 inch diameter objects were encountered in mason jars (Photograph 12 & 13). The jars appeared to be 3/4 filled and unopened. Only methane was encountered with the flame-ionization detector. Five jars were found. One jar was broken and the objects were smeared together with a clayey texture. All objects were noted and not removed from the excavation. The water table was encountered at 3 feet. All trenches were backfilled (Photograph 14) and the back hoe was decontaminated.

Study Area 22

Two anomalies were investigated at SA-22 at McCoy Annex, Naval Training Center, Orlando, Orange County, Florida. The site map (Figure 3) shows the locations of the two anomalies.

The first anomaly, 22TP1, was excavated at 1070E - 1075E and 1300N from a previous geophysical investigation grid (Figure 3). The trench was 4 feet wide by 5 feet long and 4.5 feet deep (Photograph 15). The water table was encountered at approximately four feet. Remnants of an old tree were found. No volatile organic vapors were encountered and the anomaly was identified as not hazardous. Due to time restraints and dark clouds, the old tree was assumed to be the anomaly in question and the excavation was backfilled.

The second anomaly, 22TP2, was excavated at 1300E and 1300N (Figure 3). The anomaly was identified as an 8-inch diameter metal pipe (Photograph 16). The start of the pipe was at 1310E, 1280N and ran northwest into the lake edge at 1270E, 1310N. No volatile organic vapors were encountered and the anomaly was identified as not hazardous. The excavation was backfilled.

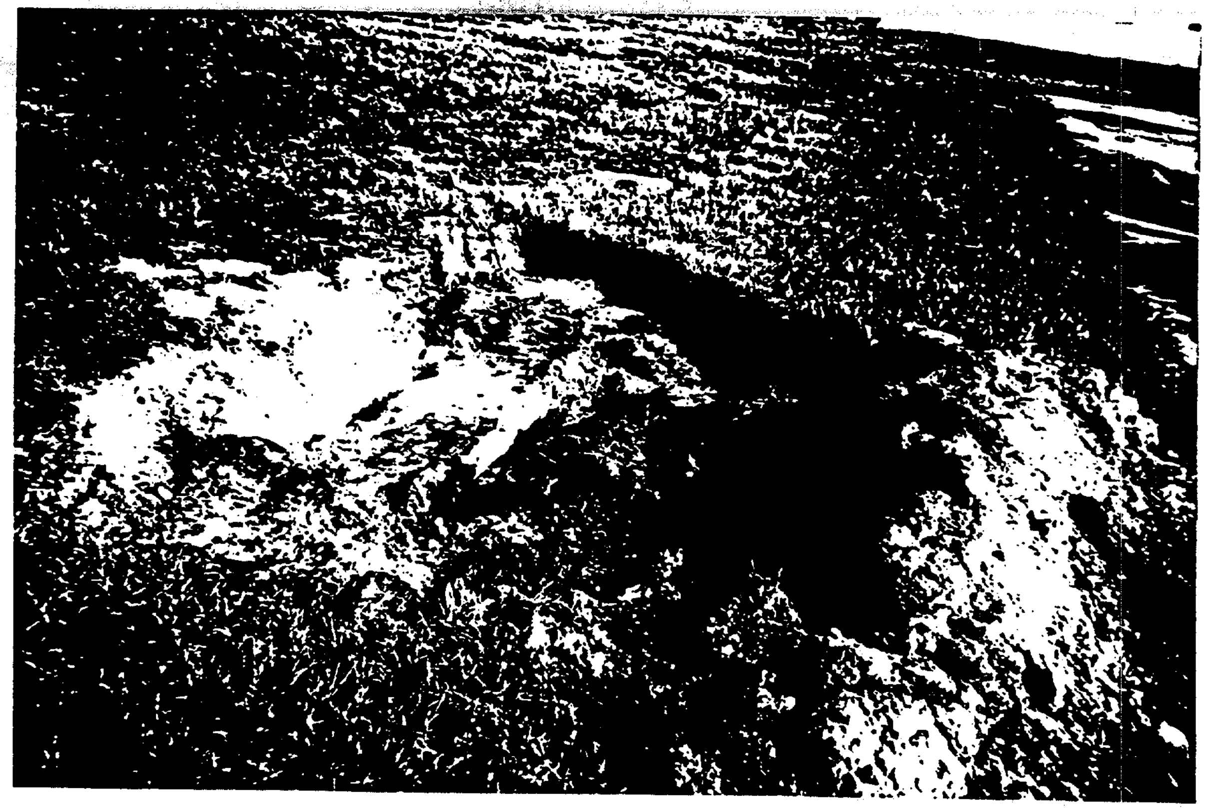


Photograph # 1: Backhoe being decontaminated.

Photograph # 2: 55-gallon drum for IDW storage.

Photograph # 3: Backhoe taking 6-inch buckets of soil at a time.

Photograph # 4: Monitoring each bucket for volatile organic vapors with a flame-ionization detector and recording any readings.



Photograph # 5: Excavation 44TP1 facing North.

Photograph # 6: Excavation 44TP1 backfilled with original soil.

Photograph # 7: Metal pipe found at 44TP2.

Photograph # 8: Concrete pad found at 44TP2.

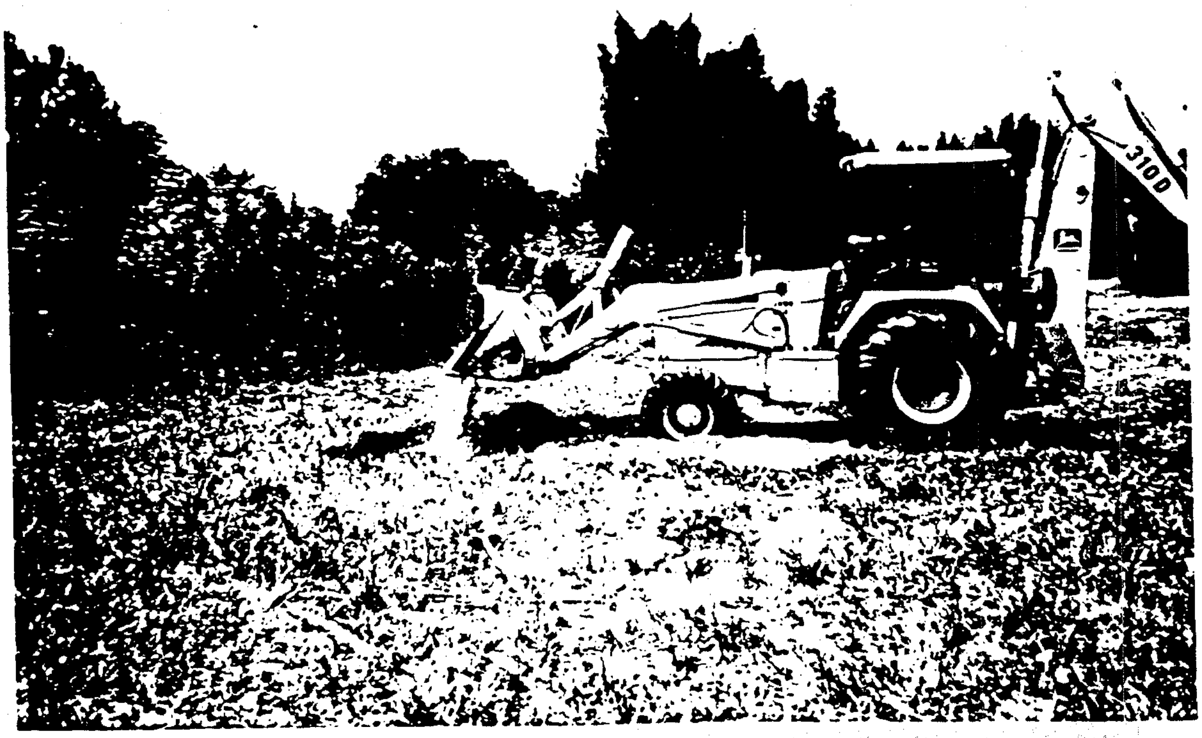
Photograph # 9: Wood & metal debris found at SA-17.

Photograph # 10: Wood and metal debris found at SA-17.

Photograph # 11: Trench 17TP1c.

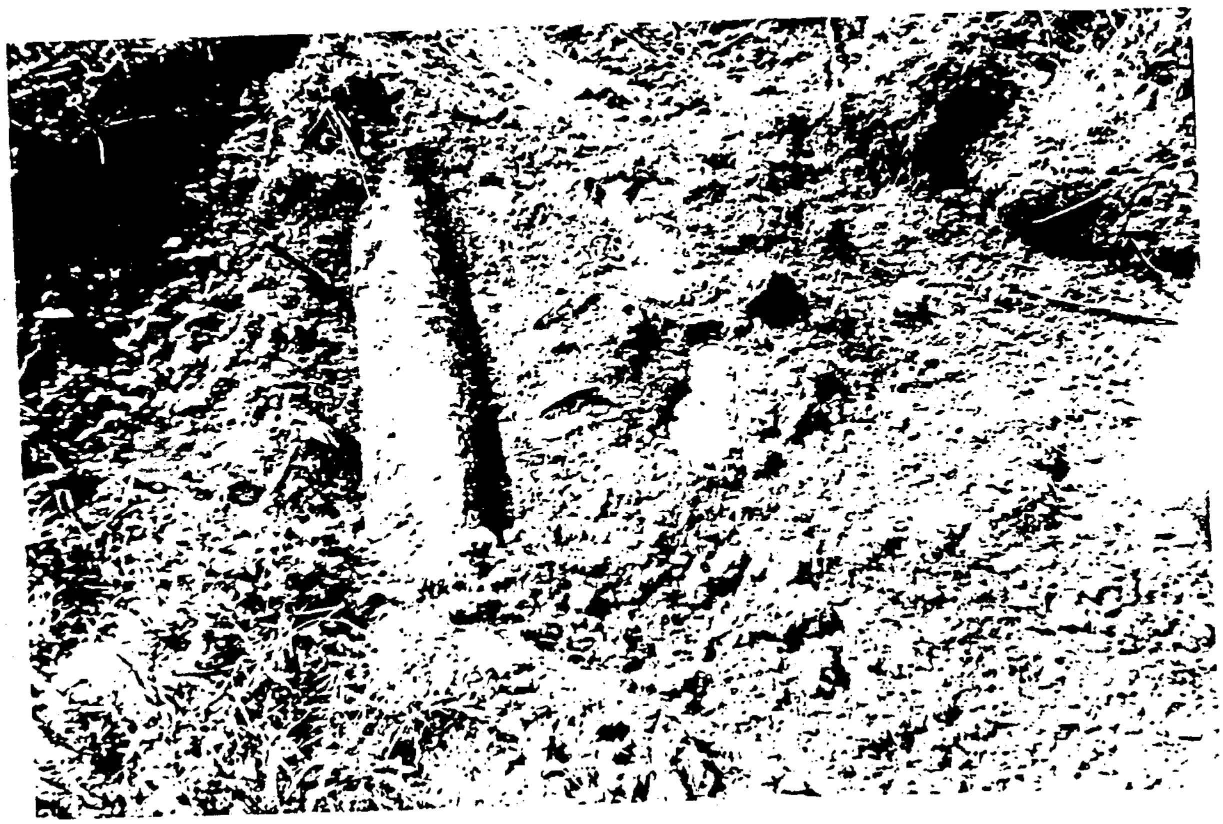
Photograph # 12: Yellow, elliptical, 1/2 inch to 3/4 inch diameter objects encountered in mason jars.

Photograph # 13: Yellow, elliptical, 1/2 inch to 3/4 inch diameter objects encountered in mason jars.



Photograph # 14: Backfilling trenches at SA-17.

Photograph # 15: Excavation at 22TP1.



Photograph # 16: Anomaly at 22TP2.

APPENDIX F

PASSIVE SOIL GAS SURVEY RESULTS

PASSIVE SOIL GAS SURVEY

NAVAL TRAINING CENTER ORLANDO
STUDY AREAS 16, 17, 23 & 26
ORLANDO FLORIDA

PREPARED FOR

ABB ENVIRONMENTAL SERVICES, INC.
2590 EXECUTIVE CENTER CIRCLE E
TALLAHASSEE, FLORIDA 32301

PREPARED BY

TARGET ENVIRONMENTAL SERVICES, INC.
9180 RUMSEY ROAD
COLUMBIA, MARYLAND 21045
(410) 992-6622

MAY 1995

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FIGURES

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TABLES

APPENDICES

EXECUTIVE SUMMARY

On April 18-23, 26, and May 1, 1995, **TARGET Environmental Services, Inc. (TARGET)** conducted a soil gas survey at **Naval Training Center Orlando** in Orlando, Florida. A total of 402 passive soil gas samples and 20 duplicates were collected from Study Areas 16, 17, 23, and 26 from depths of 2 to 3 feet. The samples were analyzed on a gas chromatograph equipped with an electron capture detector (GC/ECD) for halogenated hydrocarbons and a flame ionization detector (GC/FID) for petroleum hydrocarbons. The objective of the survey was to identify and possibly delineate the extent of volatile organic contamination within the shallow subsurface of the survey areas.

Study Area 16

A very low level of petroleum hydrocarbons is present at Location SG-47, but does not suggest the presence of a significant petroleum hydrocarbon contamination problem in the shallow subsurface of Study Area 16. Chlorinated hydrocarbon contamination was not evident in the shallow subsurface of Study Area 16.

Study Area 17

A very low level of petroleum hydrocarbons is present at Location SG-662, but does not suggest the presence of a significant petroleum hydrocarbon contamination problem in the shallow subsurface of Study Area 17. Chlorinated hydrocarbon contamination was not evident in the shallow subsurface of Study Area 17.

Study Area 23

Petroleum or chlorinated hydrocarbon contamination was not evident in the shallow subsurface of Study Area 23.

Study Area 26

Very low levels of petroleum hydrocarbons are present at scattered locations within the survey area, but do not suggest the presence of a significant petroleum hydrocarbon contamination problem in the shallow subsurface of Study Area 26. Chlorinated hydrocarbon contamination was not evident in the shallow subsurface of Study Area 26.

General

The chromatogram signatures of all the soil gas samples with detectable levels of FID hydrocarbons exhibited only small petroleum hydrocarbon peaks which were insufficient to allow chromatographic interpretation of the original contaminant product.

Introduction

ABB Environmental Services, Inc. (ABB) contracted **TARGET Environmental Services, Inc. (TARGET)** to perform a passive soil gas survey at 4 sites of the **Naval Training Center Orlando** in Orlando, Florida. The survey sites include Study Areas 16, 17, 23, and 26. The objective of the survey was to identify and delineate the extent of possible volatile organic contamination within the shallow subsurface these sites.

The survey sampling grids were designed by **ABB**, and on-site changes to the sampling plan were directed by **ABB** in response to site conditions encountered by **TARGET** during sampling. The proposed sampling plan included passive soil gas samples to be collected from the sites at depths of 2 to 3 feet and at an approximate grid spacing of 50 feet. The depth to groundwater was expected to be approximately 5 feet, but varying at some locations from 3 feet to 10 feet. The field phase of the survey was conducted on April 18-23, 26, and May 1, 1995.

Sample Collection and Analysis

A total of 402 passive soil gas samples and 20 duplicates were collected from the 4 survey areas at depths of 2 to 3 feet at the locations shown in Figures 1A through 1D. After multiple attempts, proposed soil gas Sample SG-512 was not installed due to impenetrable ground at that location. A detailed explanation of the sampling procedure and a copy of the passive sample installation and retrieval documentation is provided in Appendix A.

All of the samples collected during the field phase of the survey were subjected to dual analyses. One analysis was conducted according to EPA Method 8010 (modified) on a gas chromatograph equipped with an electron capture detector (ECD), and using direct injection. Specific analytes standardized for this analysis were:

1,1-dichloroethene (11DCE)
methylene chloride (CH_2Cl_2)
trans-1,2-dichloroethene (t12DCE)
1,1-dichloroethane (11DCA)
cis-1,2-dichloroethene (c12DCE)
chloroform ($CHCl_3$)
1,1,1-trichloroethane (111TCA)
carbon tetrachloride (CCl_4)
trichloroethene (TCE)
1,1,2-trichloroethane (112TCA)
tetrachloroethene (PCE)

The chlorinated hydrocarbons in this suite were chosen because of their common usage in industrial solvents, and/or their degradational relationship to commonly used compounds.

The second analysis was conducted according to EPA Method 8020 (modified) on a gas chromatograph equipped with a flame ionization detector (FID), and using direct injection. The analytes selected for standardization in this analysis were:

benzene
toluene
ethylbenzene
meta- and para- xylene
ortho- xylene

These compounds were chosen because of their utility in evaluating the presence of fuel products, or petroleum based solvents. An explanation of the laboratory procedures is provided in Appendix B.

The tabulated results of the laboratory analyses of the soil gas samples are reported in micrograms per liter-vapor (µg/l-v) in Tables 1 and 2. Although "micrograms per liter" is equivalent to "parts per billion (volume/volume)" in water analyses, they are not equivalent in gas analyses, due to the difference in the mass of equal volumes of water and gas matrices. The xylenes concentrations reported in Table 1 are the sum of the m- and p-xylene and the o-xylene concentrations for each sample. With **TARGET**'s analytical run conditions, 11DCE/TCTFA and

CCl_4/12DCA occur as co-eluting pairs and are reported in Table 2 in concentrations of 11DCE and CCl_4, respectively. The reporting limit for 11DCE was raised to 10 μg/l due to an artifact of the laboratory which was consistent for the batches of samples analyzed for this survey.

Quality Assurance/Quality Control (QA/QC) Evaluation

Field QA/QC Samples

Each trip blank consisted of a vial prepared for passive sampling enclosed in a heat-sealed aluminum pouch and was kept with the remaining undeployed passive sampling vials during each day's field activities until being opened, capped on-site and transported with a batch of samples to the laboratory. Equipment blanks were prepared at the start of each installation day's activities by removing a vial from its pouch and placing it within a PVC holding device. The holding device was wrapped in aluminum foil until the end of the day, when the vial was removed from the device, capped on-site and transported to the laboratory. Field duplicate samples were installed in the ground within a 1' lateral radius of every twentieth field sample. The laboratory results for all of these QA/QC samples are reported in Tables 1 and 2. Low level concentrations of petroleum hydrocarbons from an unknown source were detected in several of the field control blanks and trip blanks. In order to compensate for this blank contamination, the reporting limits for toluene, ethylbenzene and xylenes were raised (to levels above those detected in the blanks, see Table 1) for all of the soil gas samples collected during the survey.

Laboratory QA/QC Samples

To document analytical repeatability, a duplicate laboratory analysis was performed on every tenth field sample. Laboratory blanks of nitrogen gas were also analyzed after every tenth field sample. The results of these analyses are reported in Tables 1 and 2. Concentrations of all analytes were below the reporting limit in all laboratory blanks.

Results and Interpretation

In order to provide graphic presentation of the results, selected individual data sets in Table 1 have been mapped and contoured to produce Figures 2 through 7. Dashed contours are used where patterns are extrapolated into areas of less complete data, or as auxiliary contours. Map sample points with no data shown indicate that the analyte concentrations in the sample were below the reporting limit. The survey results for each study area are discussed separately below. An explanation of the terminology used in this report is provided in Appendix C.

Study Area 16

GC/FID analysis of the soil gas samples collected from this area revealed a very low level of Total FID Volatiles as Naphtha (Figure 2) in Sample SG-47, which was collected at the southern end of the fuel island. Samples SG-47 also contained a very low level of benzene (Figure 3). None of the remaining FID analytes were present above their respective reporting limits in any of the soil gas samples from Study Area 16. The FID chromatogram signature of Sample SG-47 exhibits a pattern of small peaks representing very low levels of petroleum hydrocarbons and is otherwise insufficient to allow chromatographic interpretation of the original product. The very low level of volatile hydrocarbons observed at this one location does not suggest the presence of a significant petroleum hydrocarbon contamination problem in the shallow subsurface of Study Area 16.

GC/ECD analysis revealed that none of the standardized chlorinated compounds were present above their respective reporting limits in any of the soil gas samples from Study Area 16.

Study Area 17

GC/FID analysis of the soil gas samples collected from this area revealed a very low level of Benzene (Figure 4) in Sample SG-662, which was collected at the northwestern corner of the survey area. Samples SG-662 also contained a low level of toluene (Figure 5). None of the remaining FID analytes were present above their respective reporting limits in any of the soil gas samples from Study Area 17. The FID chromatogram signature of Sample SG-662 exhibits a only a few small peaks representing a very low level of petroleum hydrocarbons and is otherwise insufficient to allow chromatographic interpretation of the original product. The very low level of volatile hydrocarbons observed at this one location does not suggest the presence of a significant petroleum hydrocarbon contamination problem in the shallow subsurface of Study Area 17.

GC/ECD analysis revealed that none of the standardized chlorinated compounds were present above their respective reporting limits in any of the soil gas samples from Study Area 17.

Study Area 23

GC/FID analysis of the soil gas samples collected from this area revealed that none of the standardized petroleum compounds were present above their respective reporting limits in any of the soil gas samples from Study Area 23.

GC/ECD analysis revealed that none of the standardized chlorinated compounds were present above their respective reporting limits in any of the soil gas samples from Study Area 23.

Study Area 26

GC/FID analysis of the soil gas samples revealed very low levels of Benzene (Figure 6) in a few samples from the northeastern end of the survey area and at 3 isolated locations toward the southwestern end of the area. Toluene (Figure 7) was present in low concentrations at several scattered locations across the survey area. A low level of ethylbenzene occurred only in Sample SG-618, while xylenes were present only in Sample SG-641. Total FID as Naphtha was below the reporting limit for all of the soil gas samples collected in Study Area 26. The FID chromatogram signatures of the samples with detectable levels of volatiles revealed only very small peaks representing very low levels of petroleum hydrocarbons which are insufficient to allow chromatographic interpretation of the original product. The very low levels of volatile hydrocarbons observed at scattered locations at this site do not suggest the presence of a significant petroleum hydrocarbon contamination problem in the shallow subsurface of Study Area 26.

GC/ECD analysis revealed that none of the standardized chlorinated compounds were present above their respective reporting limits in any of the passive soil gas samples collected from Study Area 26.

Conclusions

Study Area 16

- A very low level of petroleum hydrocarbons is present at Location SG-47, but does not suggest the presence of a significant petroleum hydrocarbon contamination problem in the shallow subsurface of Study Area 16.
- Chlorinated hydrocarbon contamination was not evident in the shallow subsurface of Study Area 16.

Study Area 17

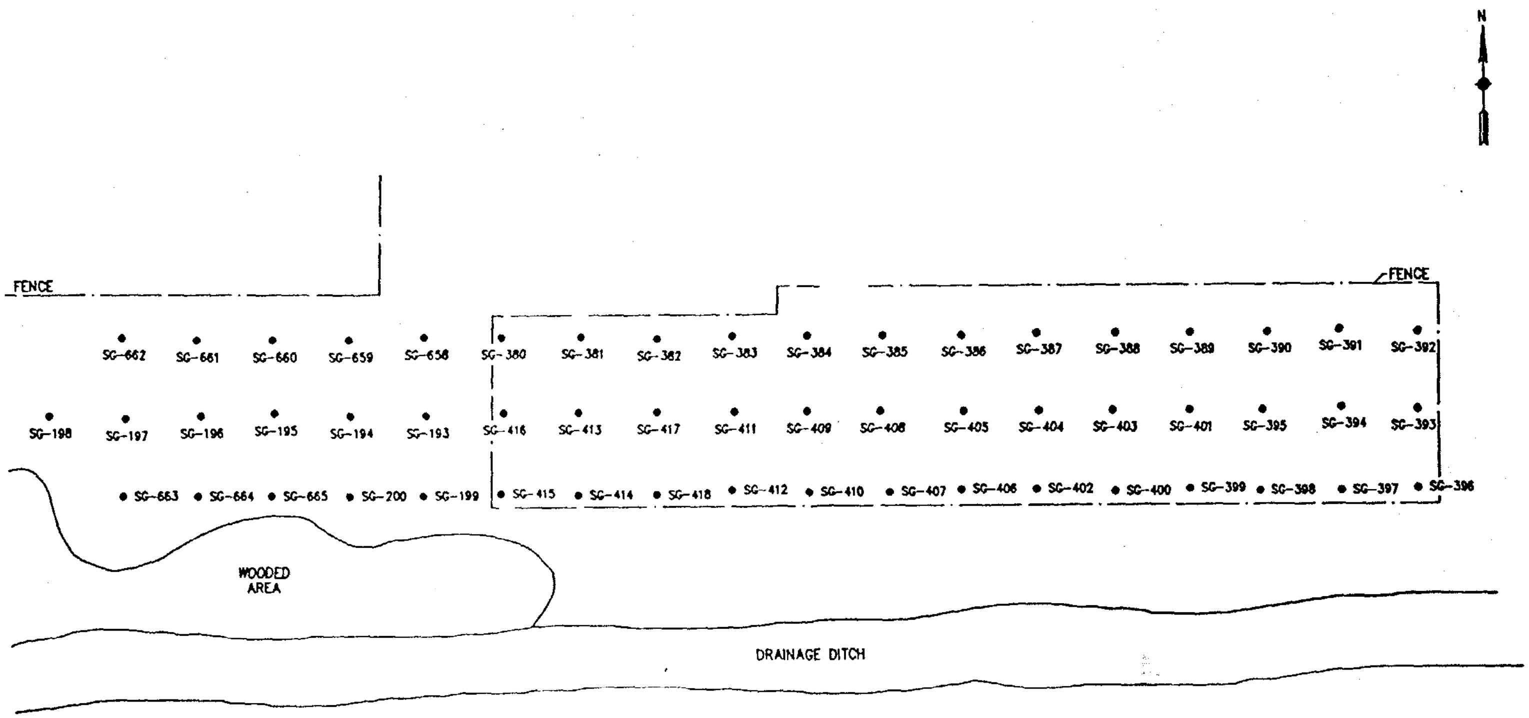
- A very low level of petroleum hydrocarbons is present at Location SG-662, but does not suggest the presence of a significant petroleum hydrocarbon contamination problem in the shallow subsurface of Study Area 17.
- Chlorinated hydrocarbon contamination was not evident in the shallow subsurface of Study Area 17.

Study Area 23

- Petroleum or chlorinated hydrocarbon contamination was not evident in the shallow subsurface of Study Area 23.

Study Area 26

- Very low levels of petroleum hydrocarbons are present at scattered locations, but do not suggest the presence of a significant petroleum hydrocarbon contamination problem in the shallow subsurface of Study Area 26.
- Chlorinated hydrocarbon contamination was not evident in the shallow subsurface of Study Area 26.



0 40 80

FEET

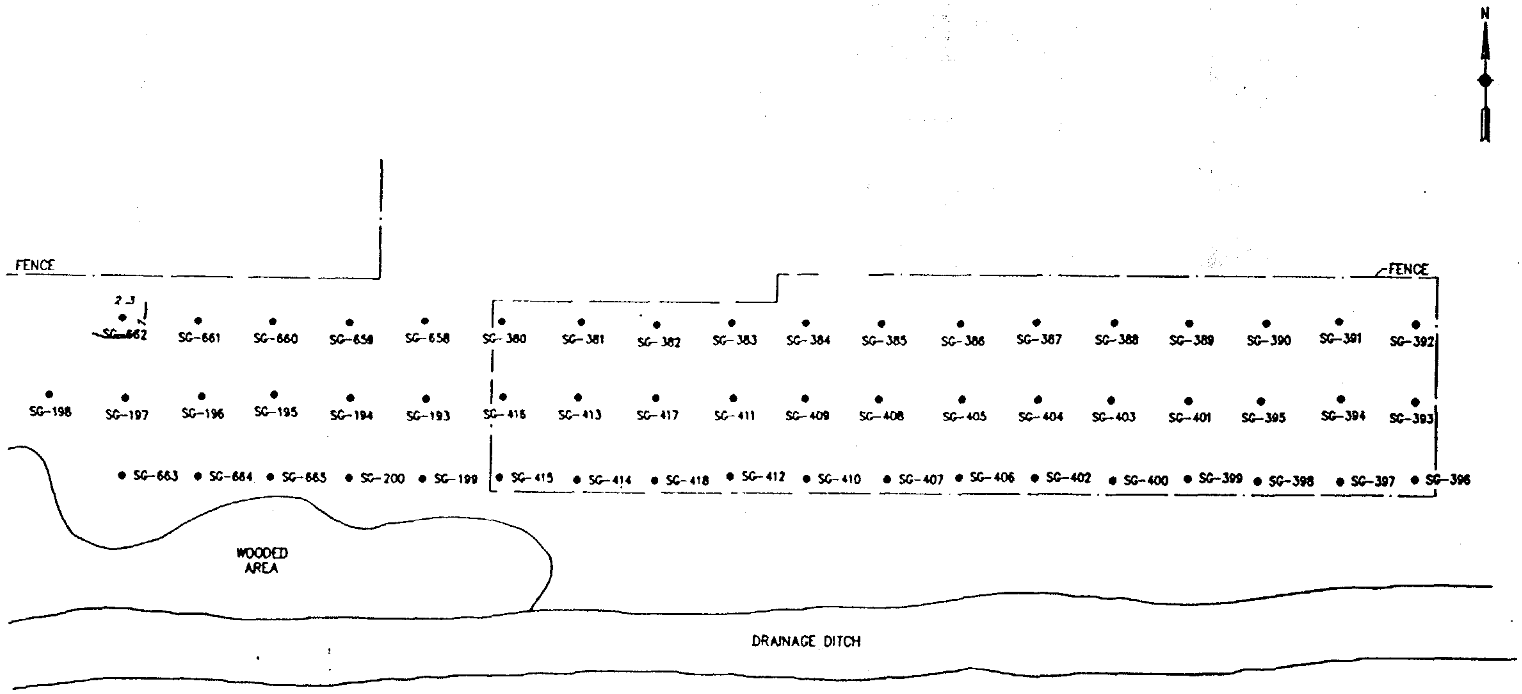
● SOIL GAS SAMPLE LOCATION

FIGURE 1B. Sample Locations

TARGET ENVIRONMENTAL SERVICES, INC.

This map is integral to a written report and should be viewed in that context.

STUDY AREA 17
NAVAL TRAINING CENTER ORLANDO
ORLANDO, FLORIDA



0 40 80

FEET

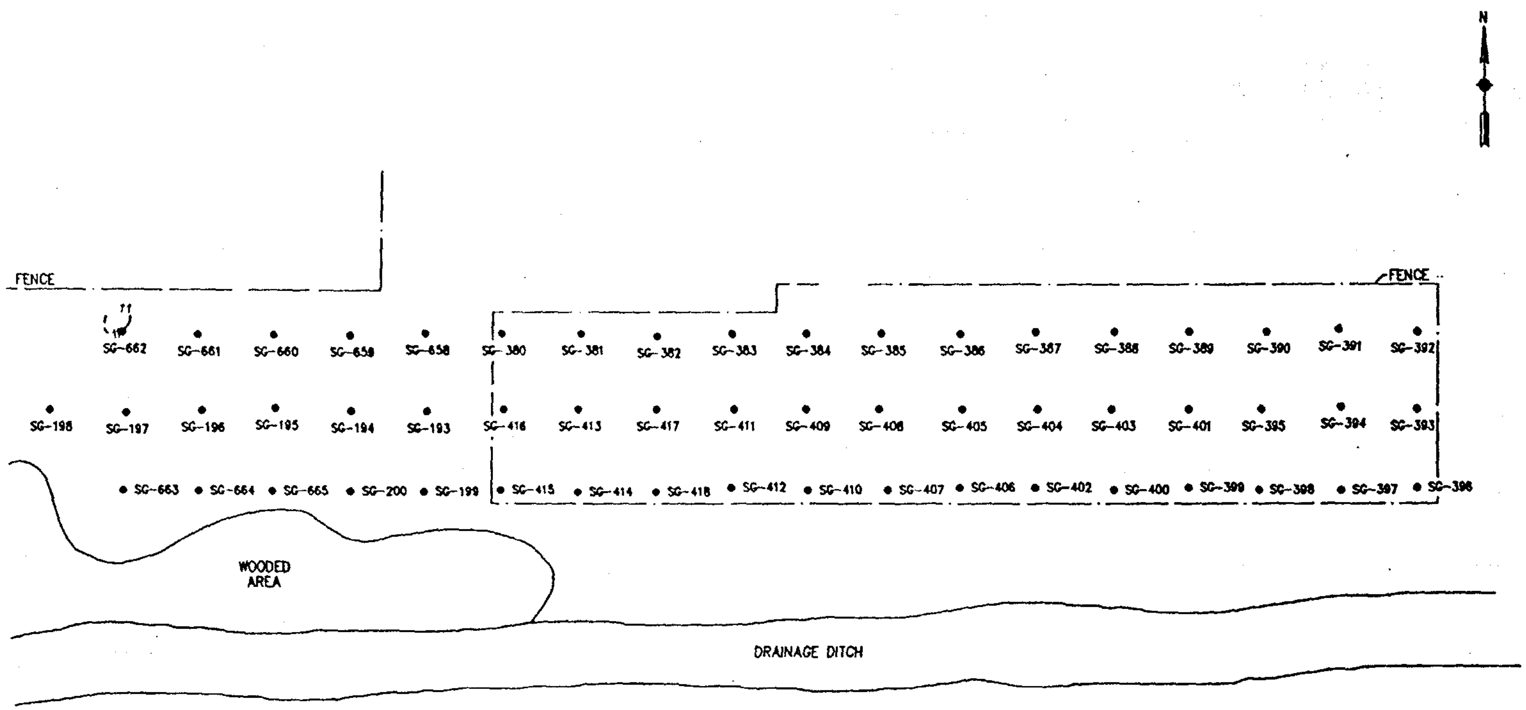
● SOIL GAS SAMPLE LOCATION

FIGURE 4. Benzene (µg/l)

TARGET ENVIRONMENTAL SERVICES, INC.

This map is integral to a written report and should be viewed in that context.

STUDY AREA 17
NAVAL TRAINING CENTER ORLANDO
ORLANDO, FLORIDA



0 40 80
FEET

● SOIL GAS SAMPLE LOCATION

FIGURE 5. Toluene ($\mu g/l$)

TARGET ENVIRONMENTAL SERVICES, INC.

This map is integral to a written report and should be viewed in that context.

STUDY AREA 17
NAVAL TRAINING CENTER ORLANDO
ORLANDO, FLORIDA

APPENDIX G

CONE PENETROMETER TESTING RESULTS, GROUNDWATER EVALUATION

FUGRO GEOSCIENCES, INC.

FUGRO

6105 Rookin
Houston, TX 77074
Phone : 713-778-5580
Fax : 713-778-5501

April 17, 1998
Report Number 0304-1023

ABB Environmental Services, Inc.
1080 Woodcock Road, Suite 100
St. Paul Building
Orlando, FL 32803

Attention: Mr. Greg Mudd

DRAFT REPORT
DIRECT PUSH TECHNOLOGY SERVICES
STUDY AREA 17
McCOY ANNEX
NAVAL TRAINING CENTER
ORLANDO, FLORIDA
SUBCONTRACT AGREEMENT NO. SE8-21-002G

Dear Mr. Mudd:

Please find enclosed herewith the draft results of the cone penetration tests conducted at the above referenced location. All tests were conducted in accordance with ASTM Standard D5778-95 and supervised by ABB Environmental Services field personnel.

Testing was done with a 15 cm^2 piezocone penetrometer tip which was hydraulically advanced into the soil at a rate of 2 cm per second. Each of the cone penetration test results were displayed on an analog strip chart and stored in digital format on a computer diskette. A total of nine cone penetration tests and one dissipation test were completed. The results of these tests are presented in Section 1 of this report.

For your information, the soil stratigraphy was identified using Campanella and Robertson's Simplified Soil Behavior Chart. Please note that because of the empirical nature of the soil behavior chart, the soil identification should be verified locally.

Groundwater sampling was conducted using Fugro's Hydro-Trap Sampler. The sampler is advanced to the desired interval where the sealed sample chamber is opened. After the sample chamber is filled, the sampler is pulled to the surface where the sample is decanted into containers provided by our client. A total of 82 samples were collected at the locations indicated in the daily logs which are included in Section 2.

Fugro Geosciences appreciates the opportunity to be of service to your organization. If you should have any questions, or if we can be of further assistance, please do not hesitate to contact us. We look forward to working with you in the future.

Very truly yours,
FUGRO GEOSCIENCES, INC.

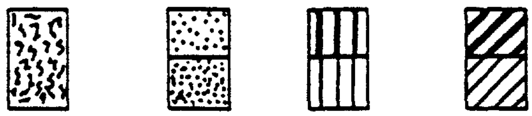
Recep Yilmaz
President

RY/mw
1 Diskette Enclosed

Key To Soil Classification and Symbols

SOIL TYPE
(Shown in Symbol Column)

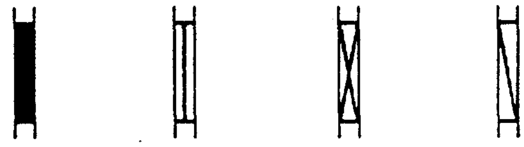
Sand Silt Clay



Fill Sandy Silty Clayey

Predominant Type Shown Heavy

SAMPLE TYPE
(Shown in Samples Column)



Undisturbed Rock Core Split Spoon No Recovery

TERMS DESCRIBING CONSISTENCY OR CONDITION

COARSE GRAINED SOILS (Major portion Retained on No. 200 Sieve)
Includes (1) clean gravels and sand described as fine, medium or course, depending on distribution of grain sizes (2) silty or clayey gravels and sands and (3) fine grained low plasticity soils (PI < 10) such as sandy silts. Condition is rated according to relative density, as determined by lab tests or estimated from resistance to sampler penetration.

Descriptive Term	Penetration Resistance*	Relative Density
Loose	0 - 10	0 to 40%
Medium Dense	10 - 30	40 to 70%
Dense	30 - 50	70 to 90%
Very Dense	Over 50	90 to 100%

* Blows/Foot, 140# Hammer, 30" Drop

FINE GRAINED SOILS (Major Portion Passing No. 200 Sieve)
Includes (1) inorganic and organic silts and clays, (2) sandy, gravelly or silty clays, and (3) clayey silts. Consistency is rated according to shearing strength, as indicated by penetrometer readings or by unconfined compression tests for soils with PI $\geq$ 10.

Descriptive Term	Cohesive Shear Strength Tons/Square Foot
Very Soft	Less Than 0.125
Soft	0.125 to 0.25
Firm	0.25 to 0.50
Stiff	0.50 to 1.00
Very Stiff	1.00 to 2.00
Hard	2.00 and Higher

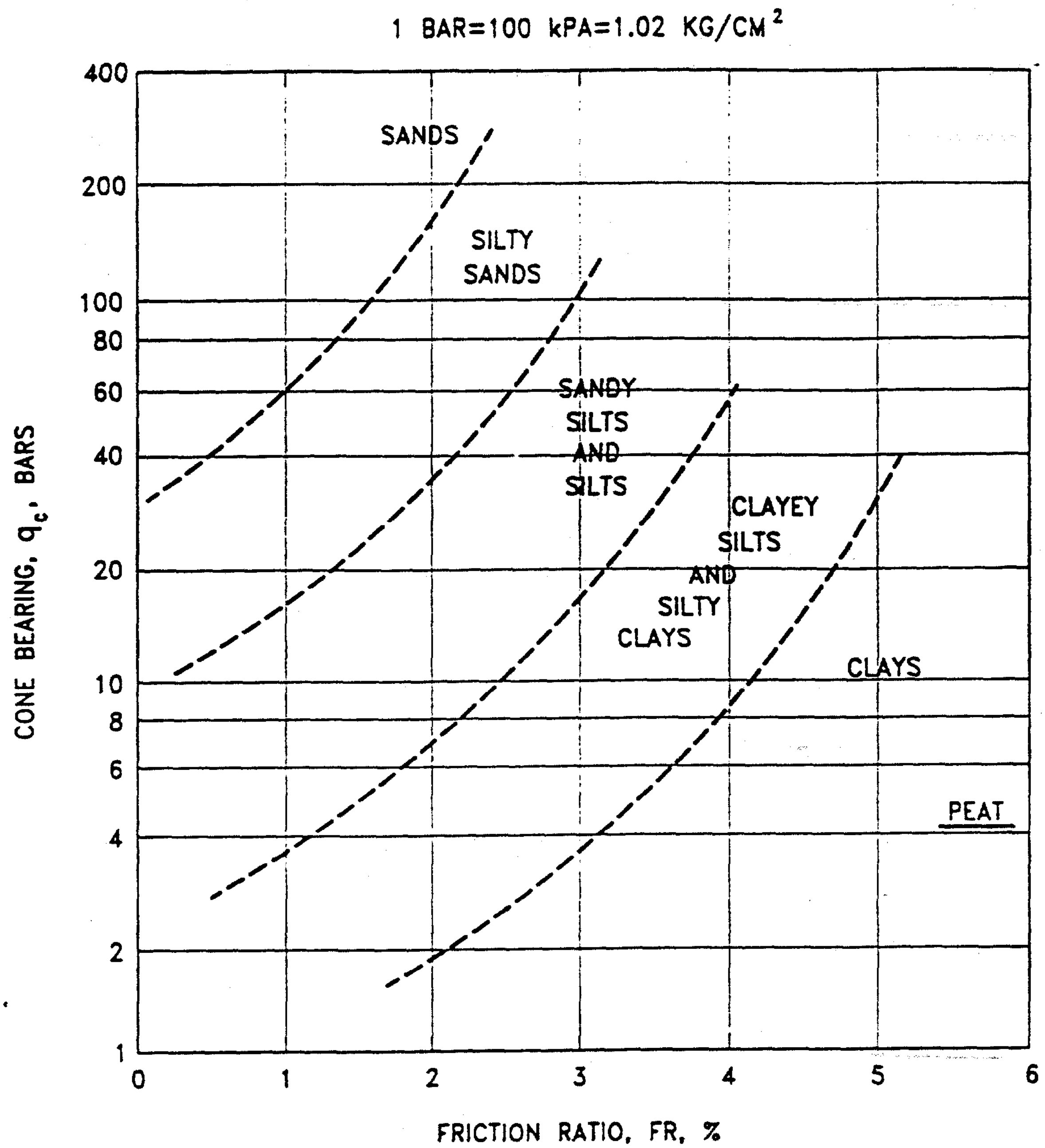
Note: Slickensided and fissured clay may have lower unconfined compressive strengths than shown above because of planes of weakness or shrinkage cracks; consistency ratings of such soils are based on hand penetrometer readings.

TERMS CHARACTERIZING SOIL STRUCTURE

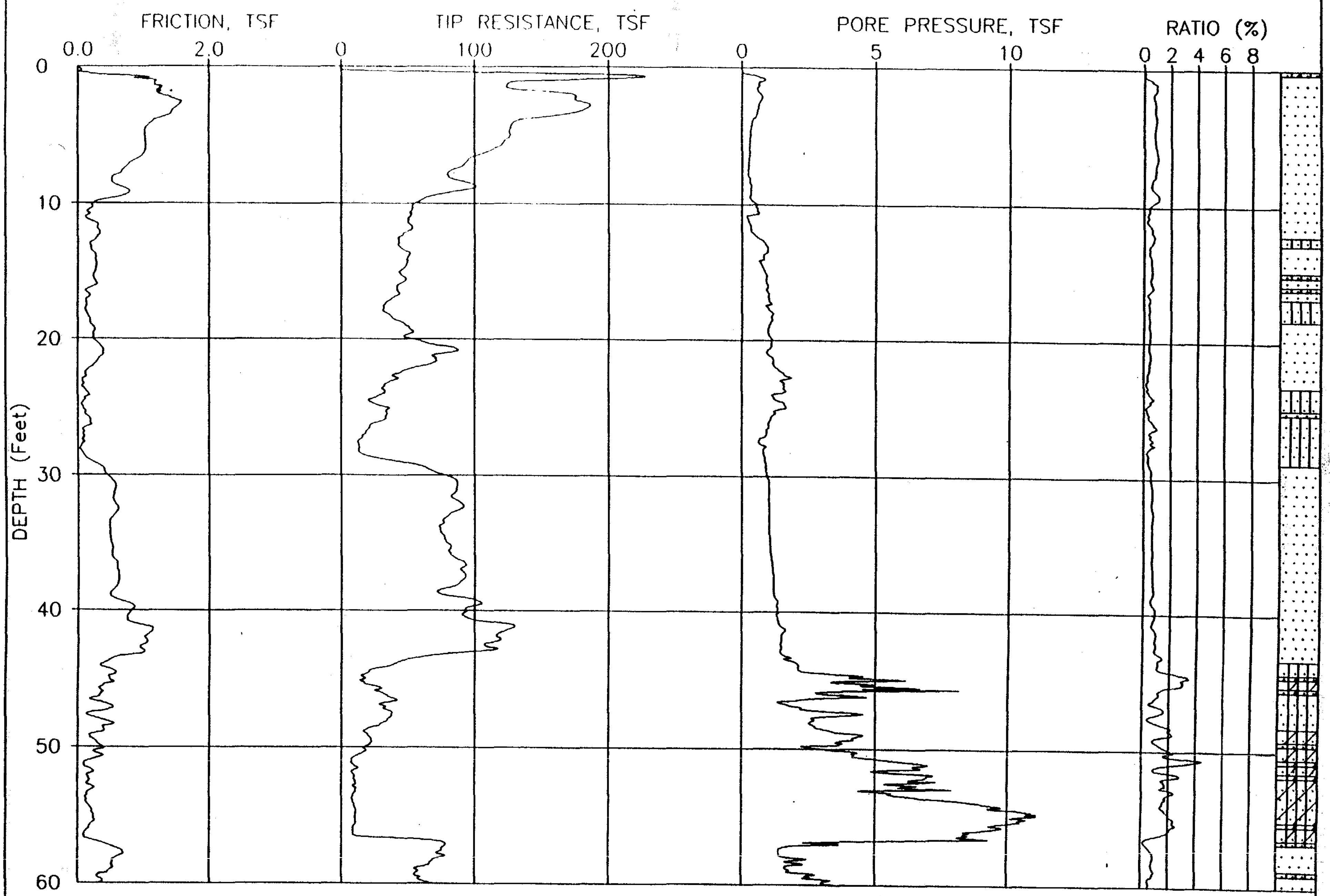
Parting: paper thin in size
Seam: 1/8" to 3" thick
Layer: greater than 3"
Fissured: containing shrinkage cracks, frequently filled with fine sand or silt, usually more or less vertical
Sensitive: pertaining to cohesive soils that are subject to appreciable loss of strength when remolded
Interbedded: composed of alternate layers of different soil types
Laminated: composed of thin layers of varying color and texture
Calcareous: containing appreciable quantities of calcium carbonate
Well Graded: having wide range in grain sizes and substantial amounts of all intermediate particle sizes
Poorly Graded: predominantly of one grain size, or having a range of sizes with some intermediate size missing
Flocculated: pertaining to cohesive soils that exhibit a loose knit or flakey structure
Slickensided: having inclined planes of weakness that are slick and glossy in appearance.

Degree of Slickensided Development

Slightly Slickensided: slickensides present at intervals of 1' to 2', soil does not easily break along these plates
Moderately Slickensided: slickensides spaced at intervals of 1' to 2', soil breaks easily along these planes
Extremely Slickensided: continuous and interconnected slickensides spaced at intervals of 4" to 12", soil breaks along the slickensides into pieces 3" to 6" in size
Intensely Slickensided: slickensides spaced at intervals of less than 4", continuous in all directions; soil breaks down along planes into nodules 1/4" to 2" in size.



CAMPANELLA AND ROBERTSON CLASSIFICATION CHART (1983)



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ELEVATION: 0.00

CPT NUMBER: 17Q003

CONE NUMBER: F7.5CKEW943

DATE: 04-01-1998

PLATE: 1 OF 2

FUGRO GEOSCIENCES,INC

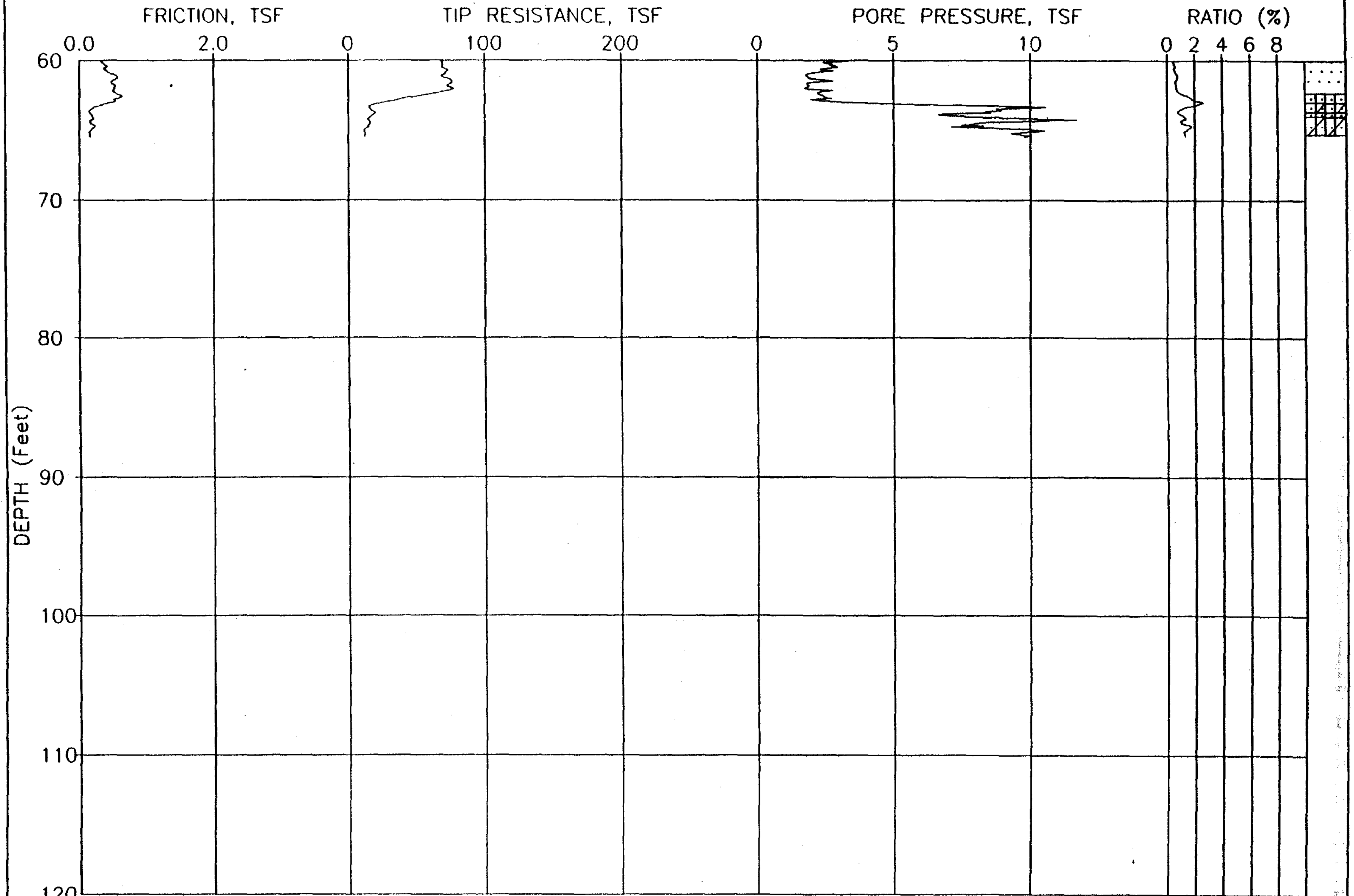

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PLATE: 2 OF 2

FUGRO GEC ICES,INC

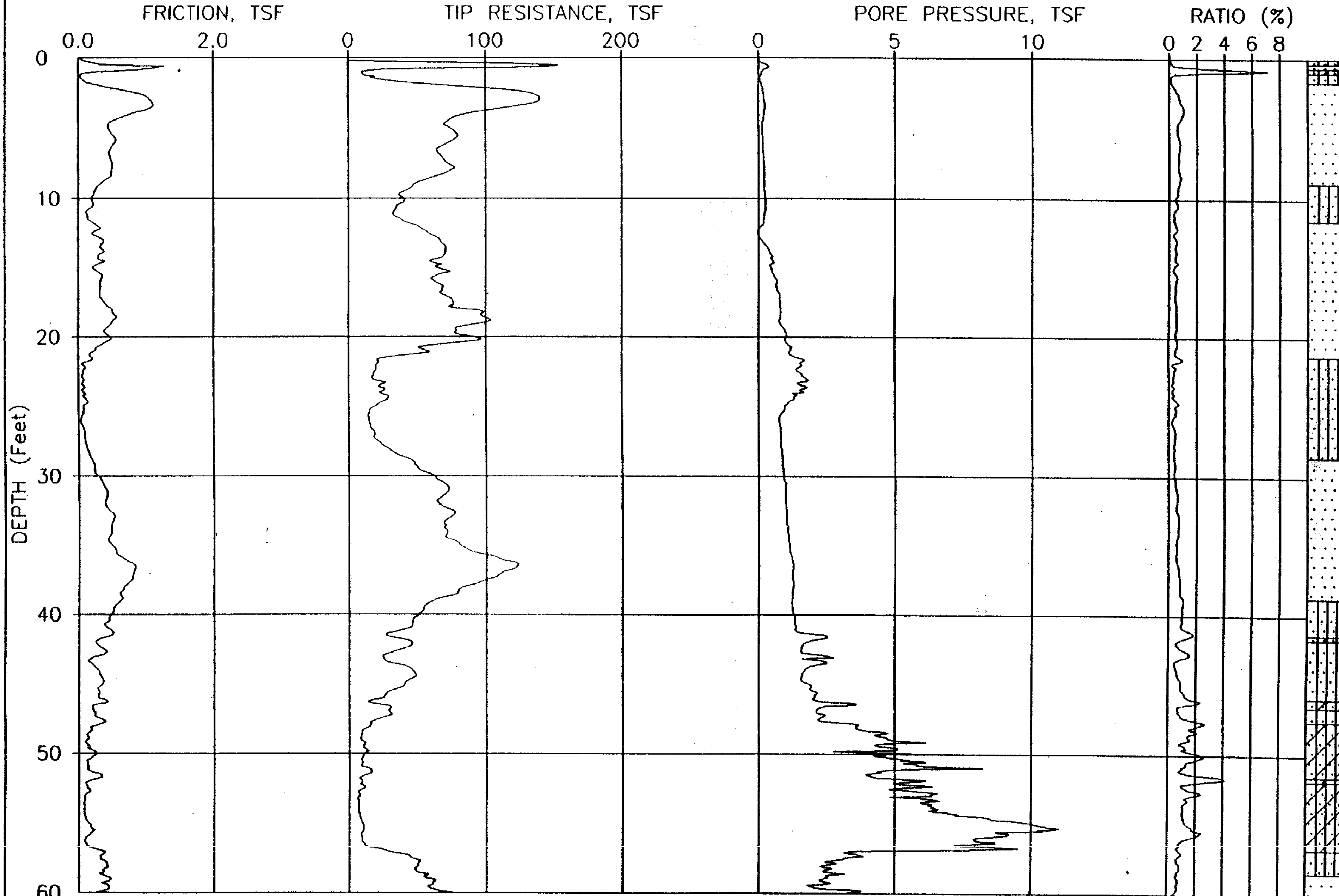

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PLATE: 1 OF 2

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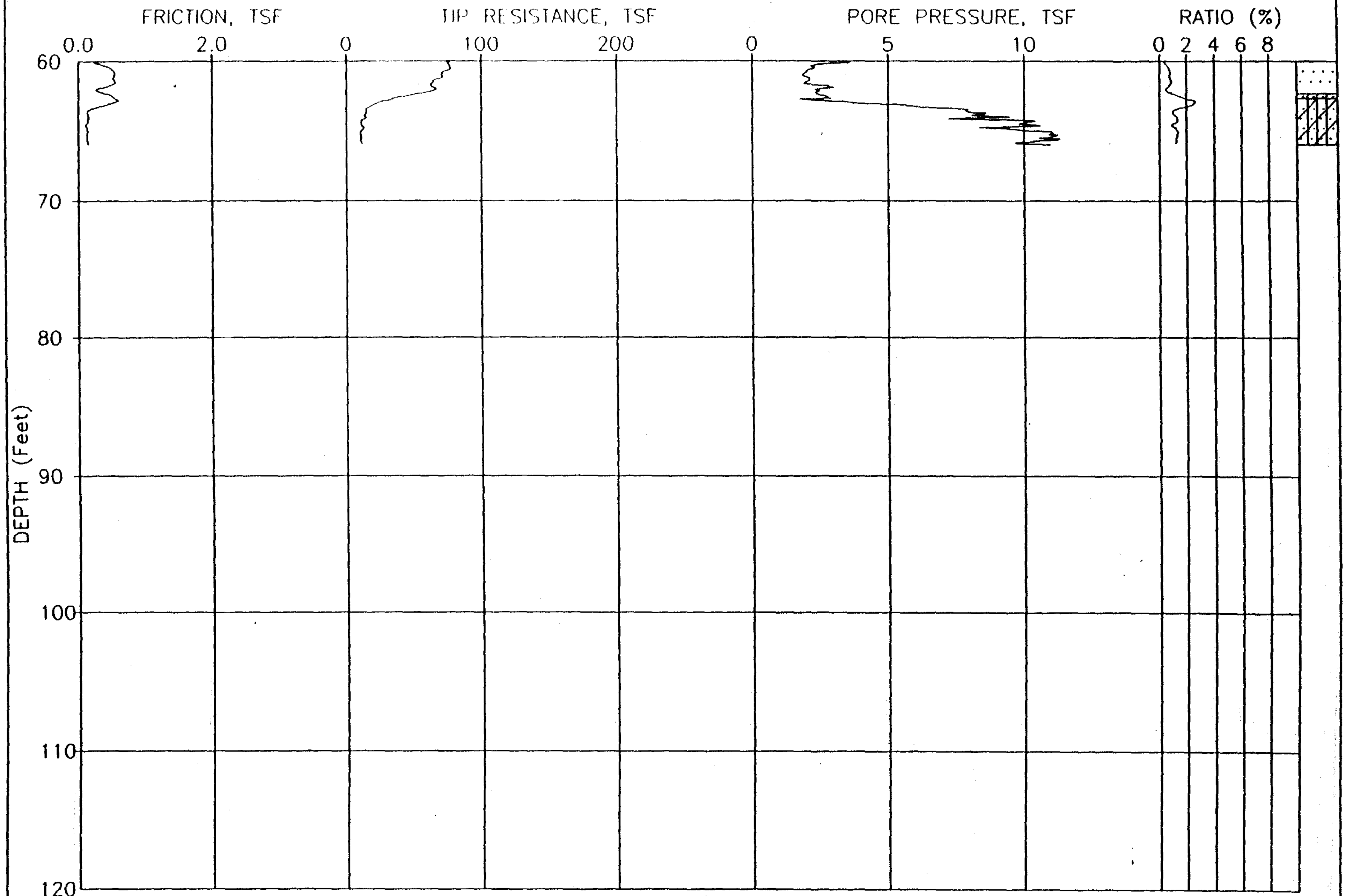

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PLATE: 2 OF 2

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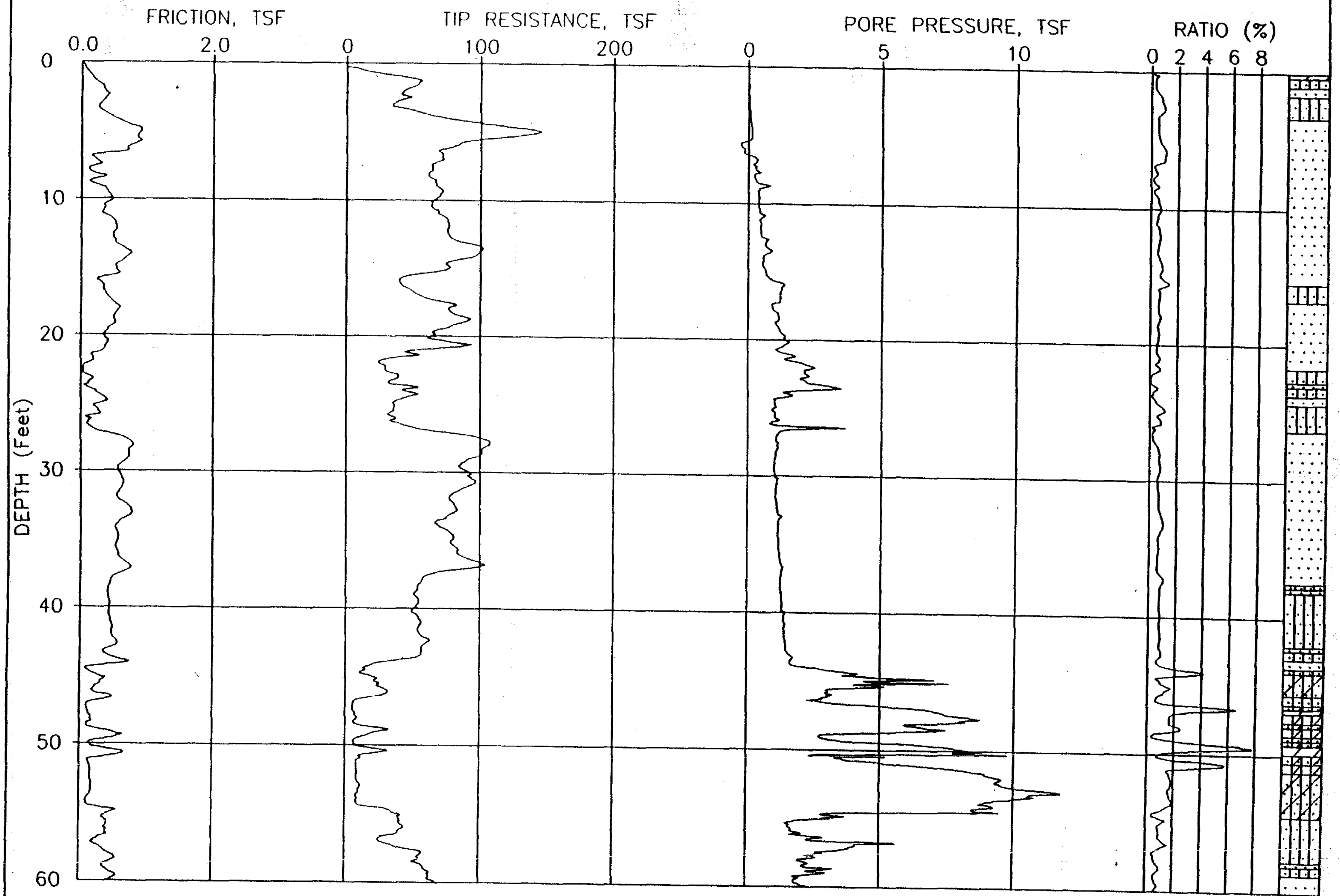

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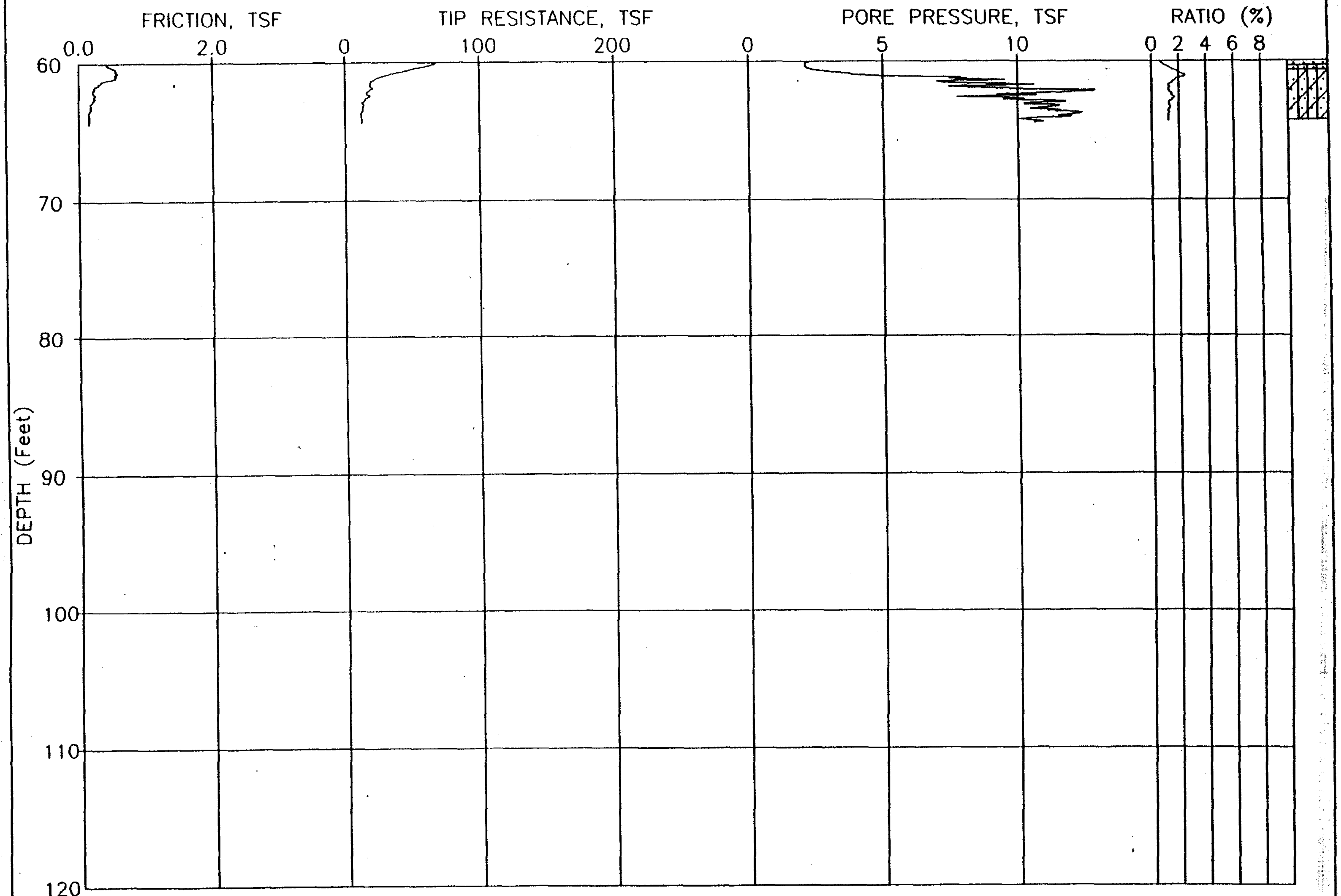
CONE NUMBER: F7.5CKEW943

DATE: 04-02-1998

PLATE: 1 OF 2

FUGRO GEOSCIENCES,INC



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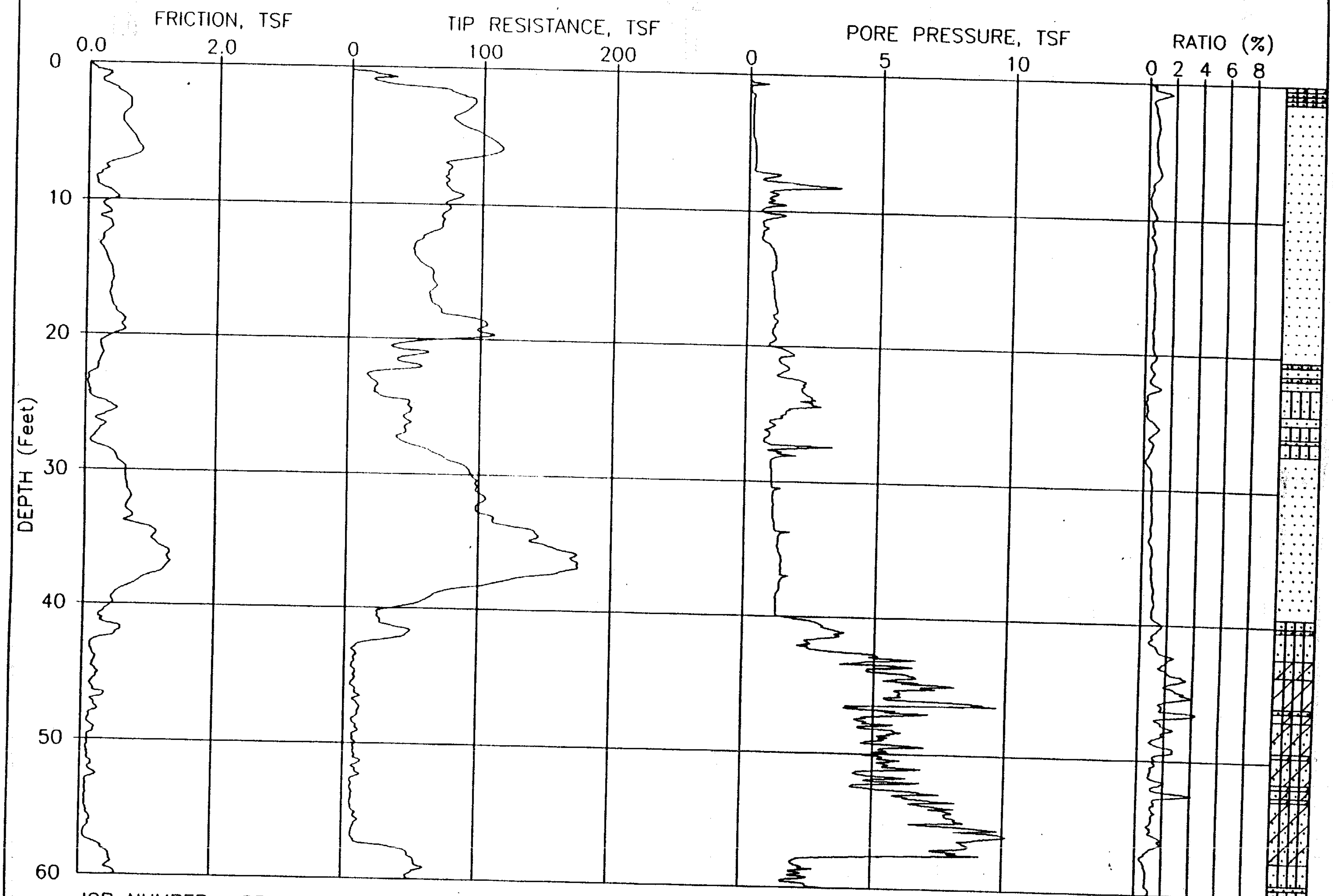
CONE NUMBER: F7.5CKEW943

DATE: 04-02-1998

PLATE: 2 OF 2

FUGRO GEOS[illegible]CES,INC



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ELEVATION: 0.00

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CONE NUMBER: F7.5CKEW943

DATE: 04-02-1998

PLATE: 1 OF 2

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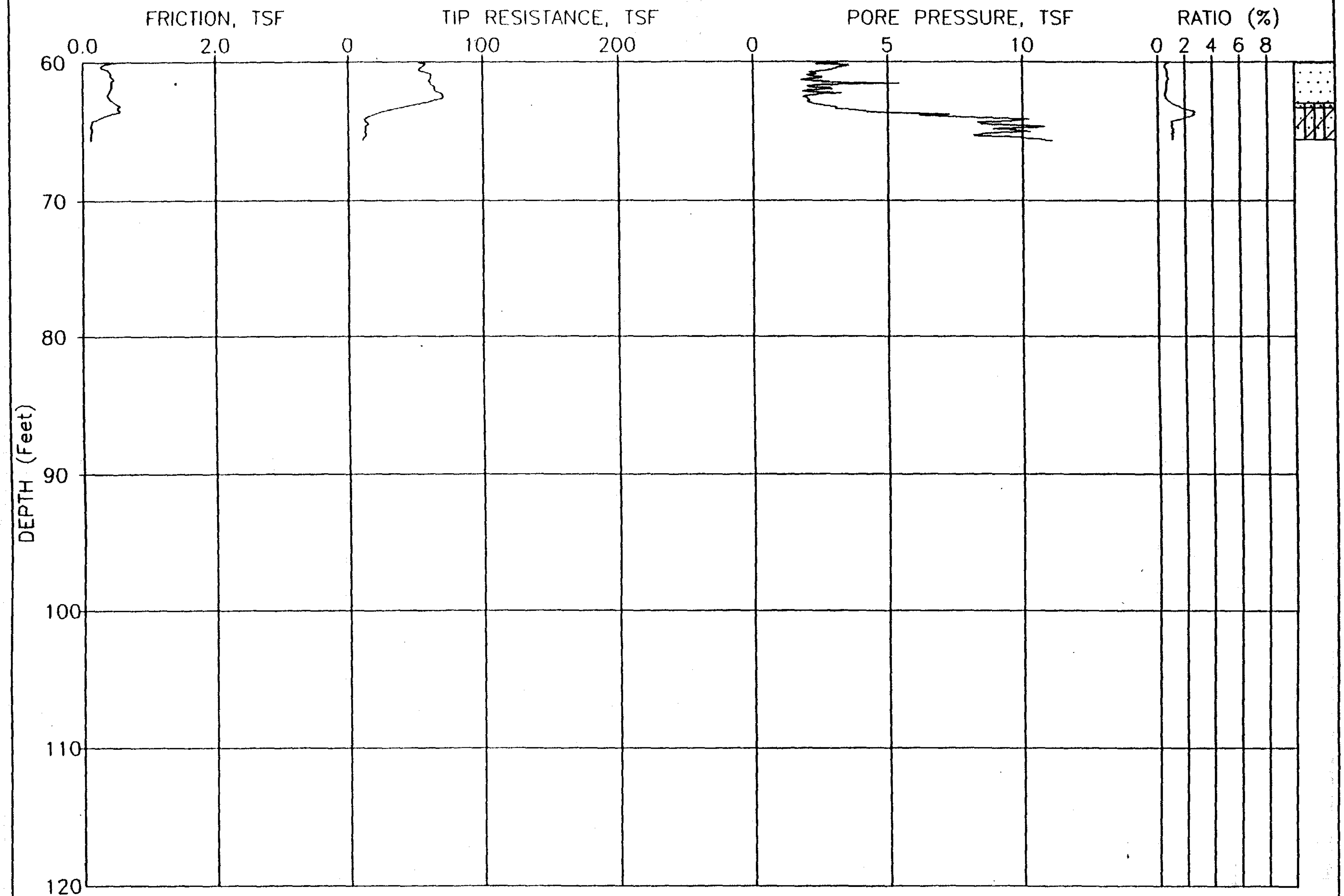

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PLATE: 2 OF 2

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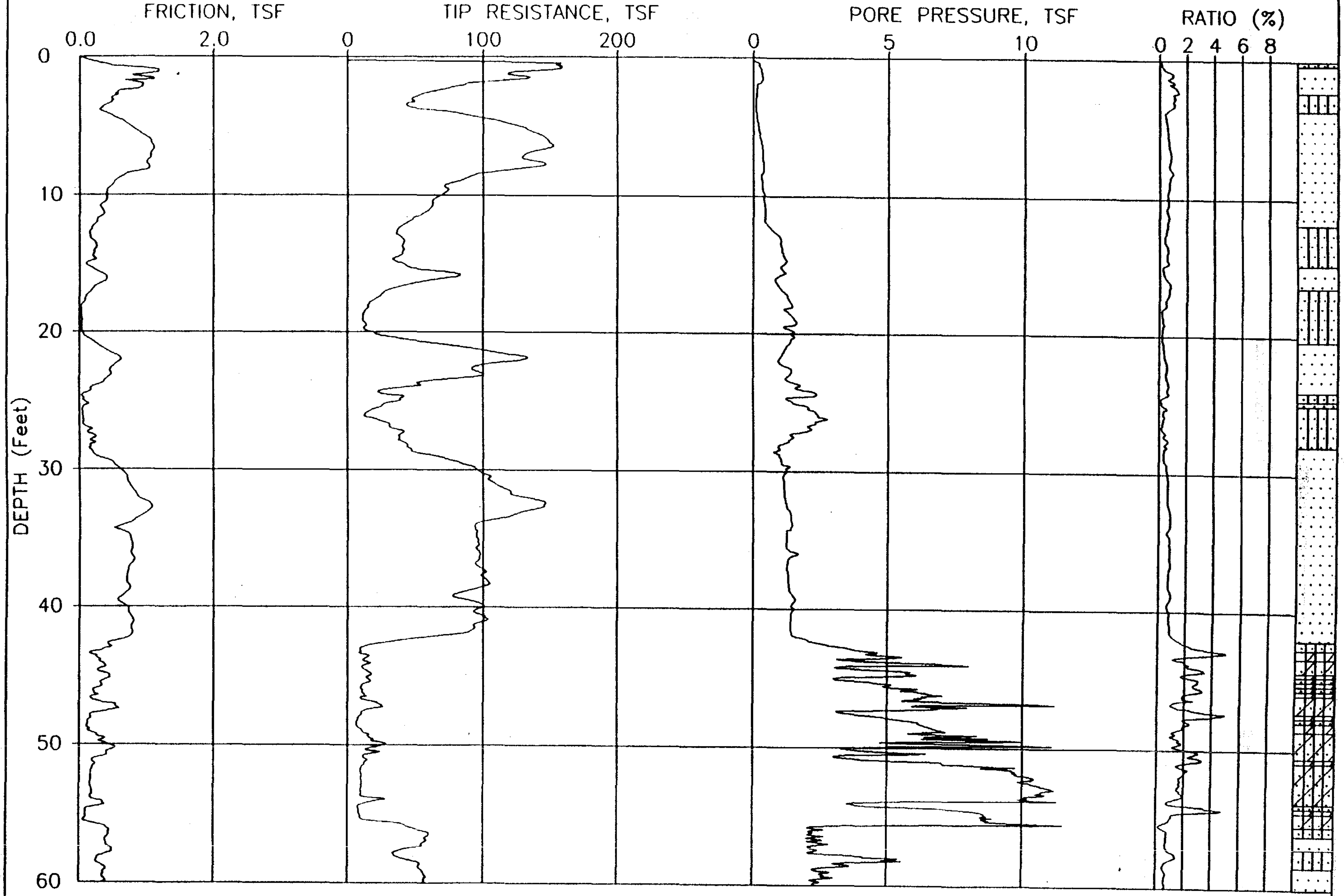

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CONE NUMBER: F7.5CKEW943

DATE: 04-01-1998

PLATE: 1 OF 2

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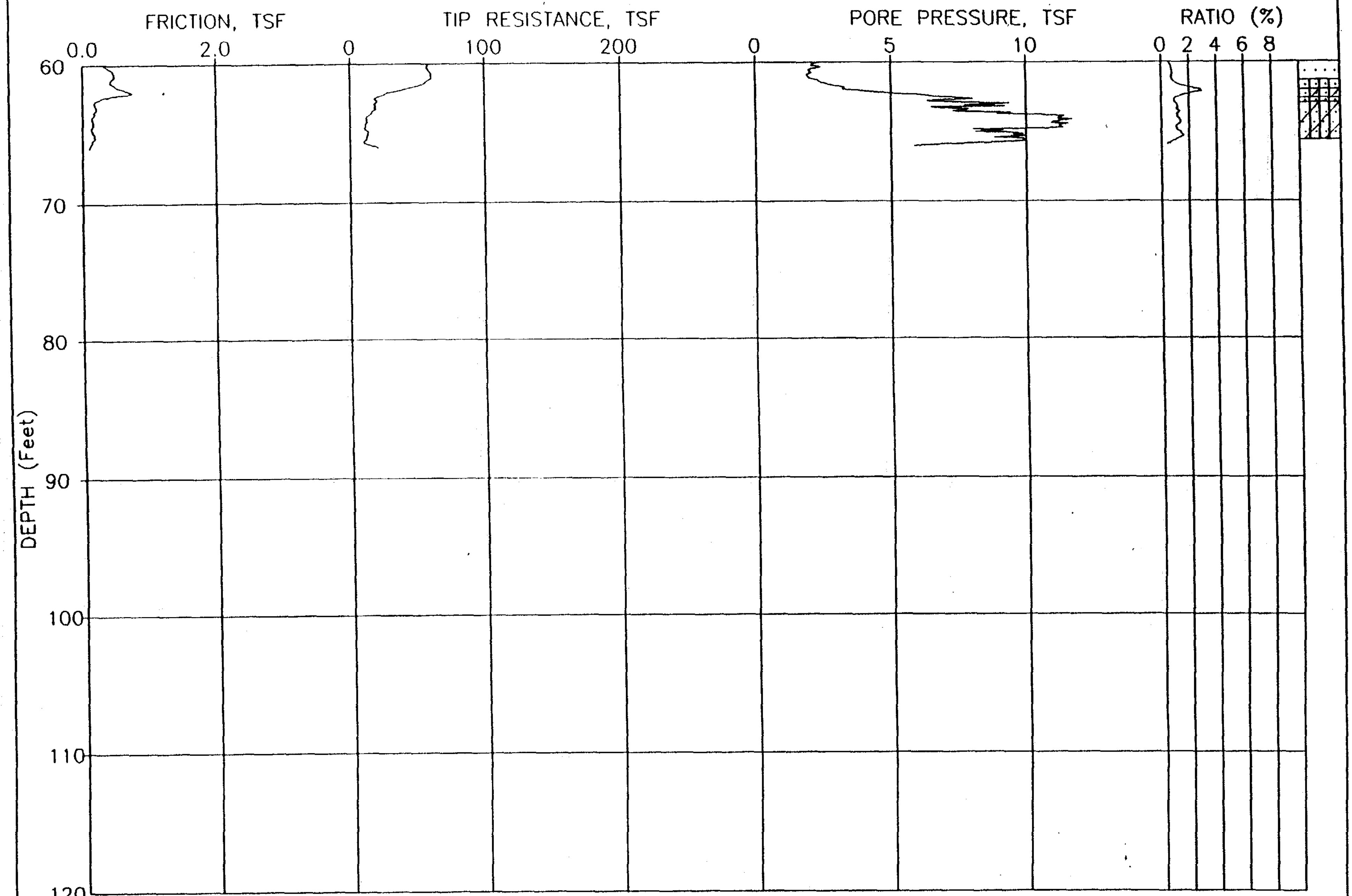

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DATE: 04-01-1998

PLATE: 2 OF 2

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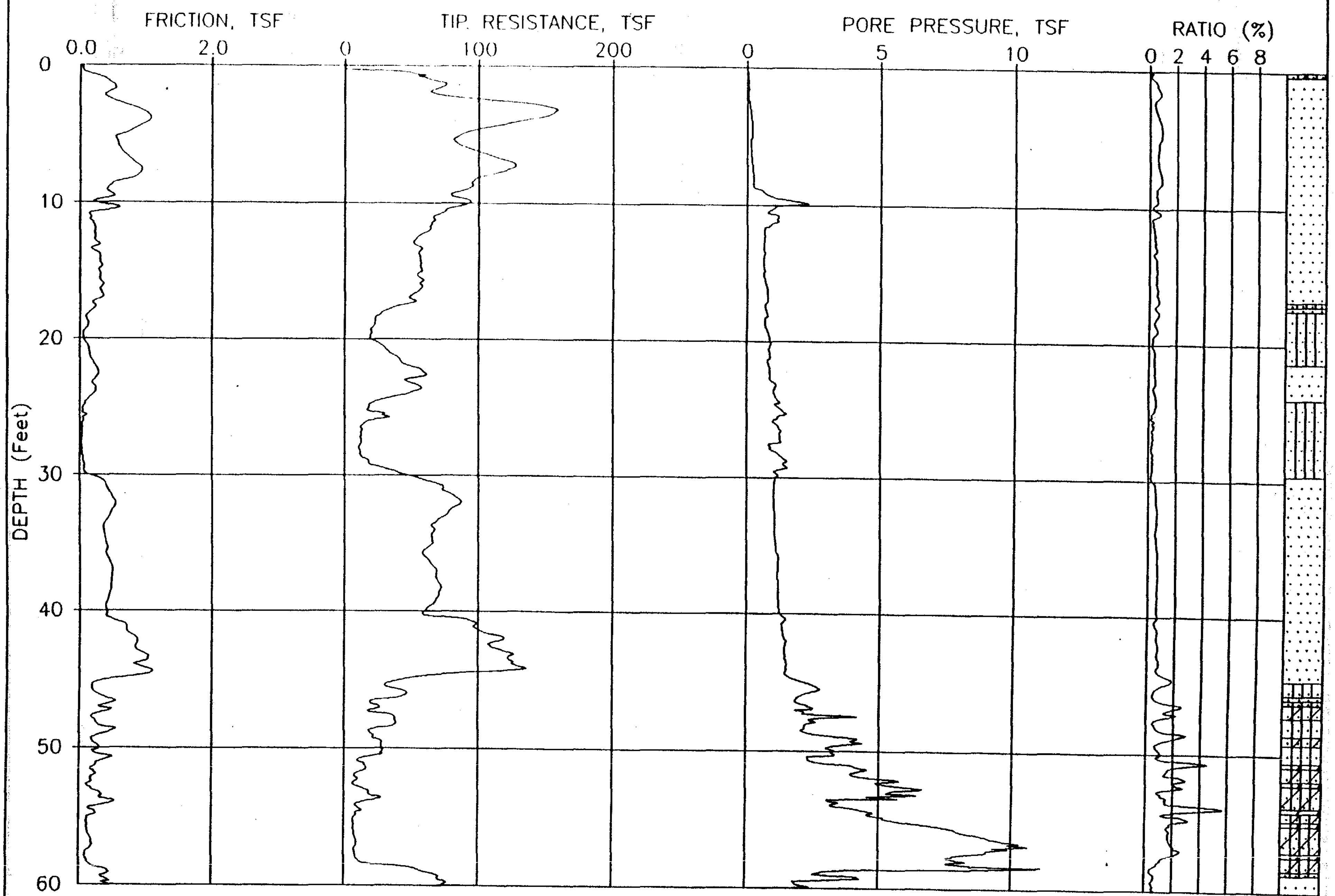

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CONE NUMBER: F7.5CKEW943

DATE: 01-03-1980

PLATE: 1 OF 2

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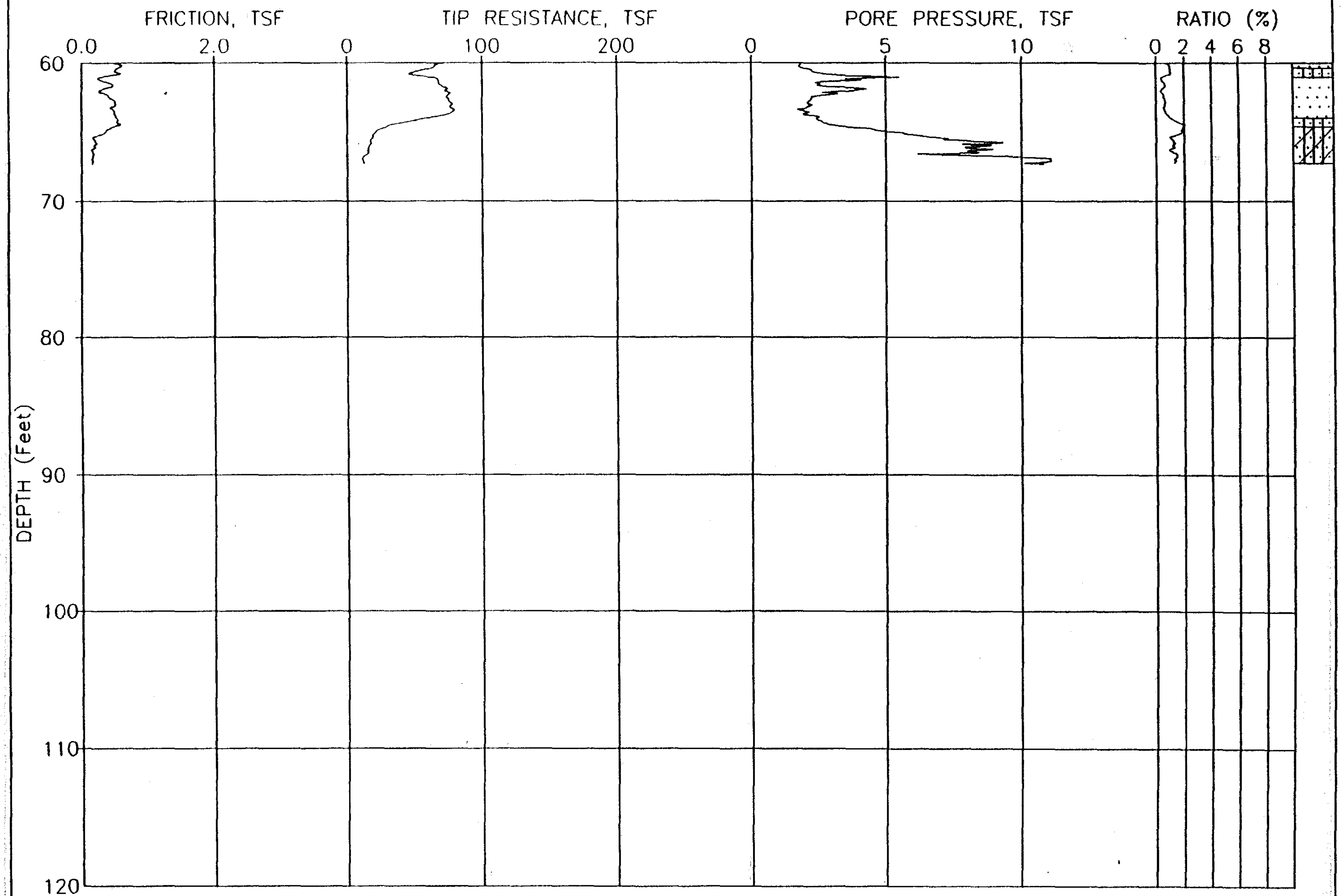

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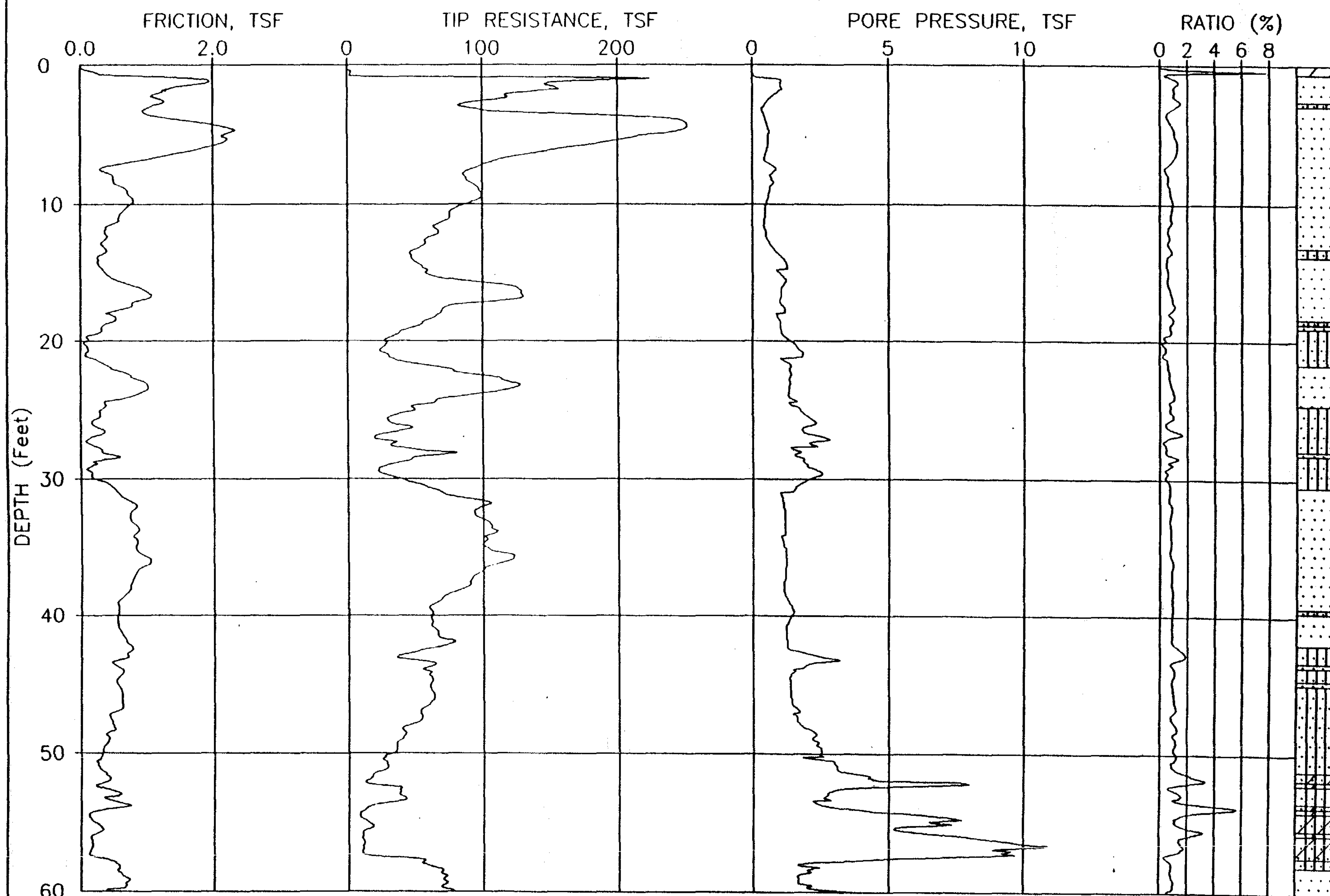
CONE NUMBER: F7.5CKEW943

DATE: 01-03-1980

PLATE: 2 OF 2

FUGRO GEOSCIENCES,INC



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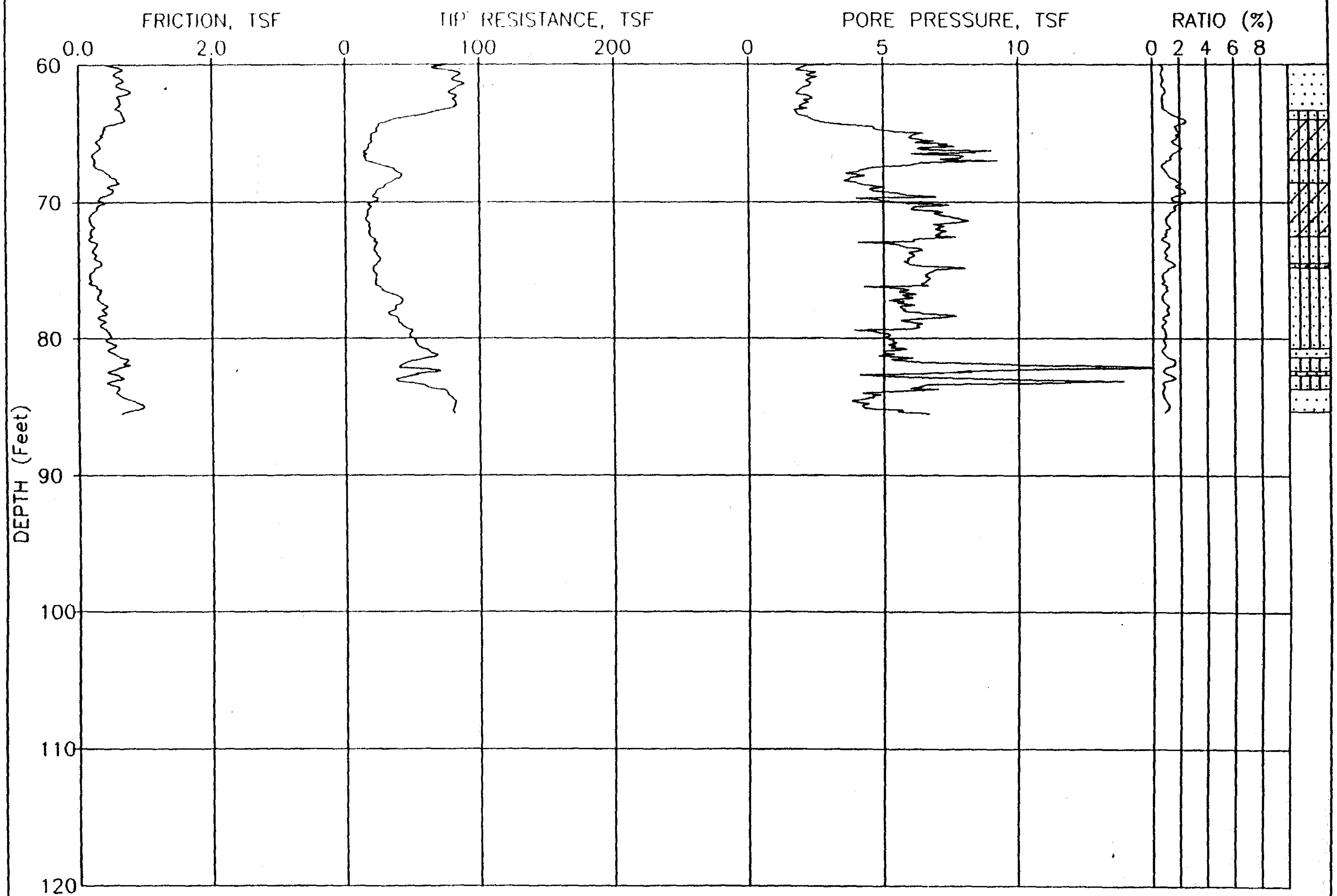
CONE NUMBER: F7.5CKEW943

DATE: 04-09-1998

PLATE: 1 OF 2

FUGRO GEOSCIENCES,INC



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CONE NUMBER: F7.5CKEW943

DATE: 04-09-1998

PLATE: 2 OF 2

FUGRO G[illegible]ENCES,INC

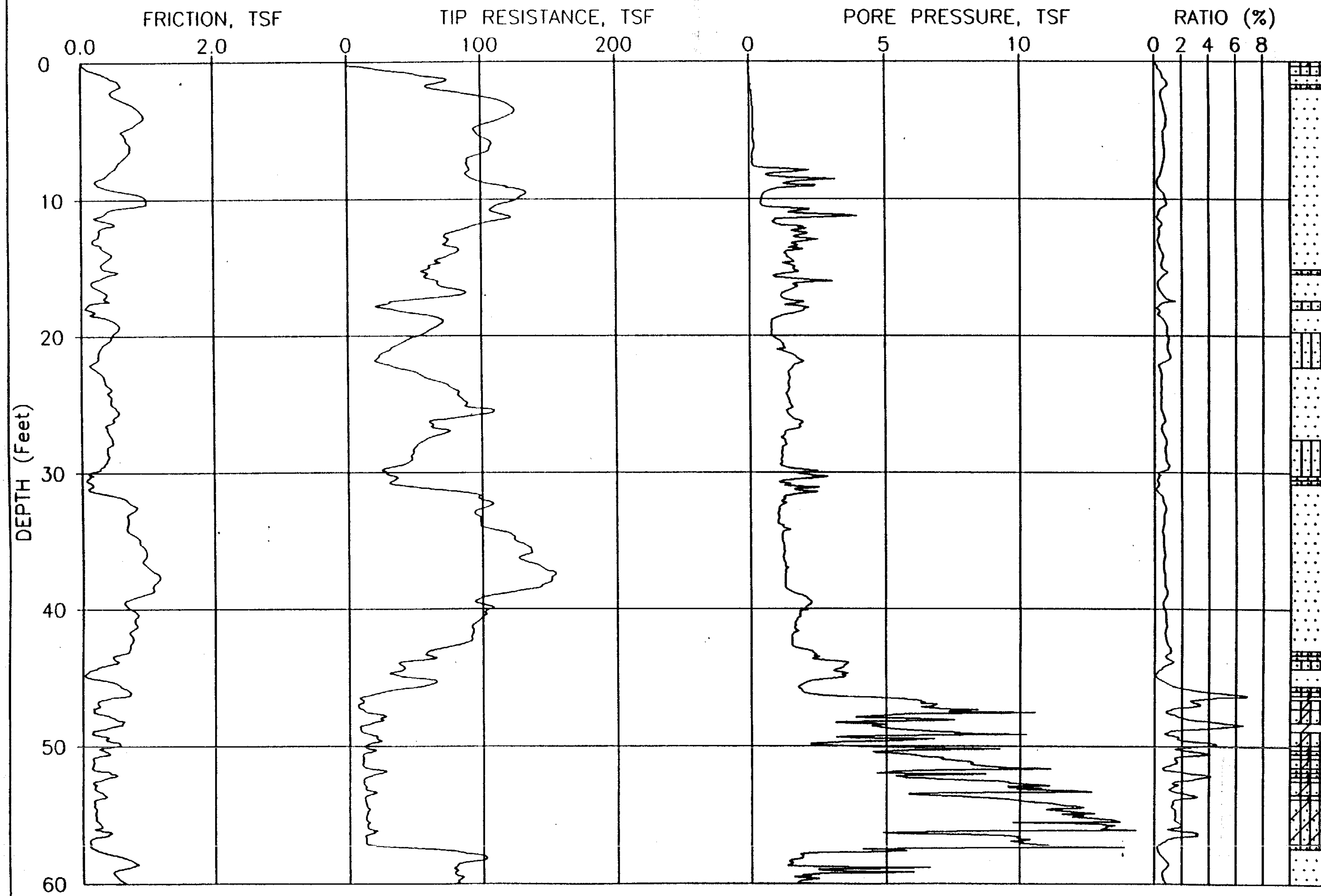

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PLATE: 1 OF 2

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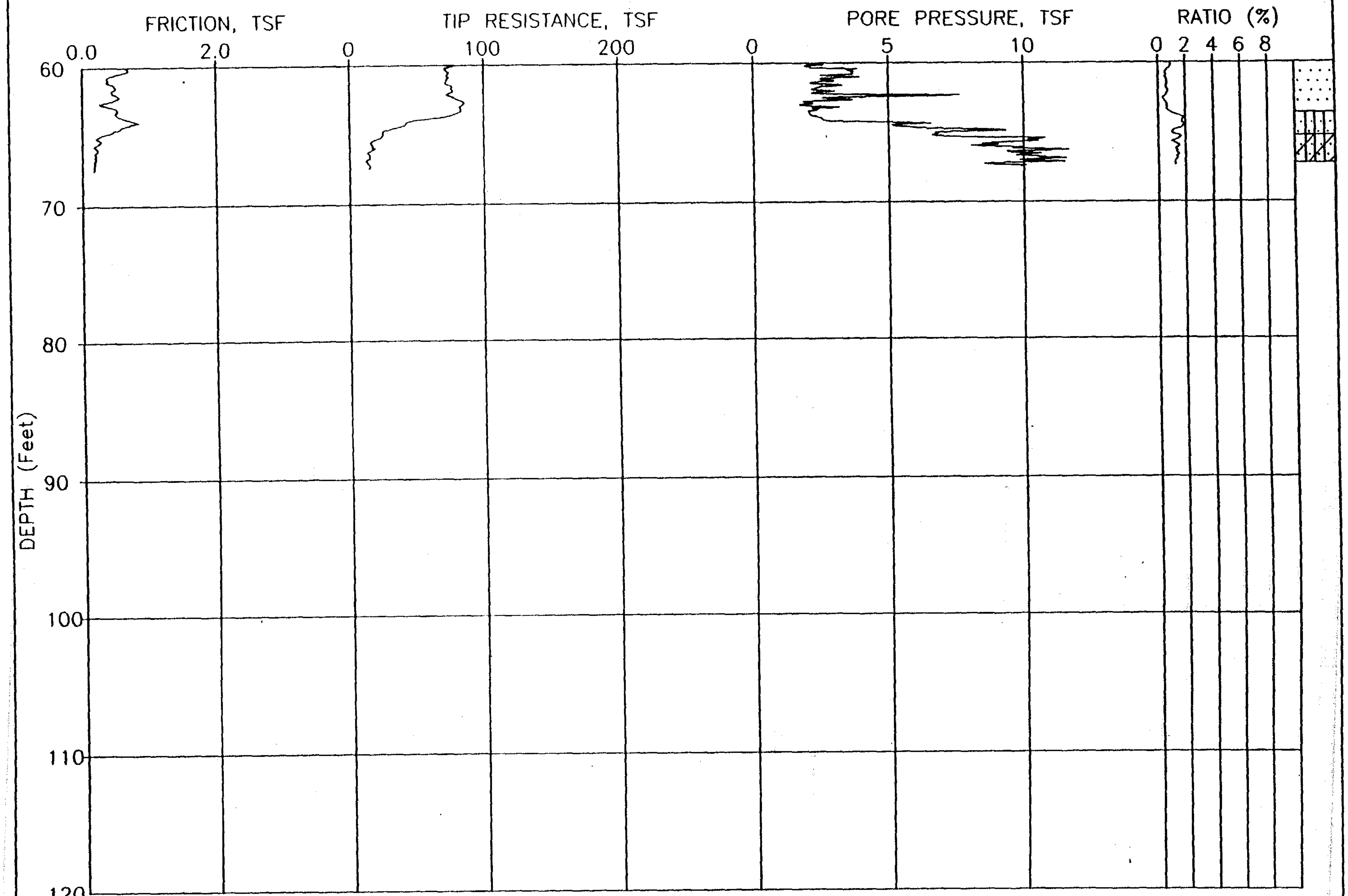

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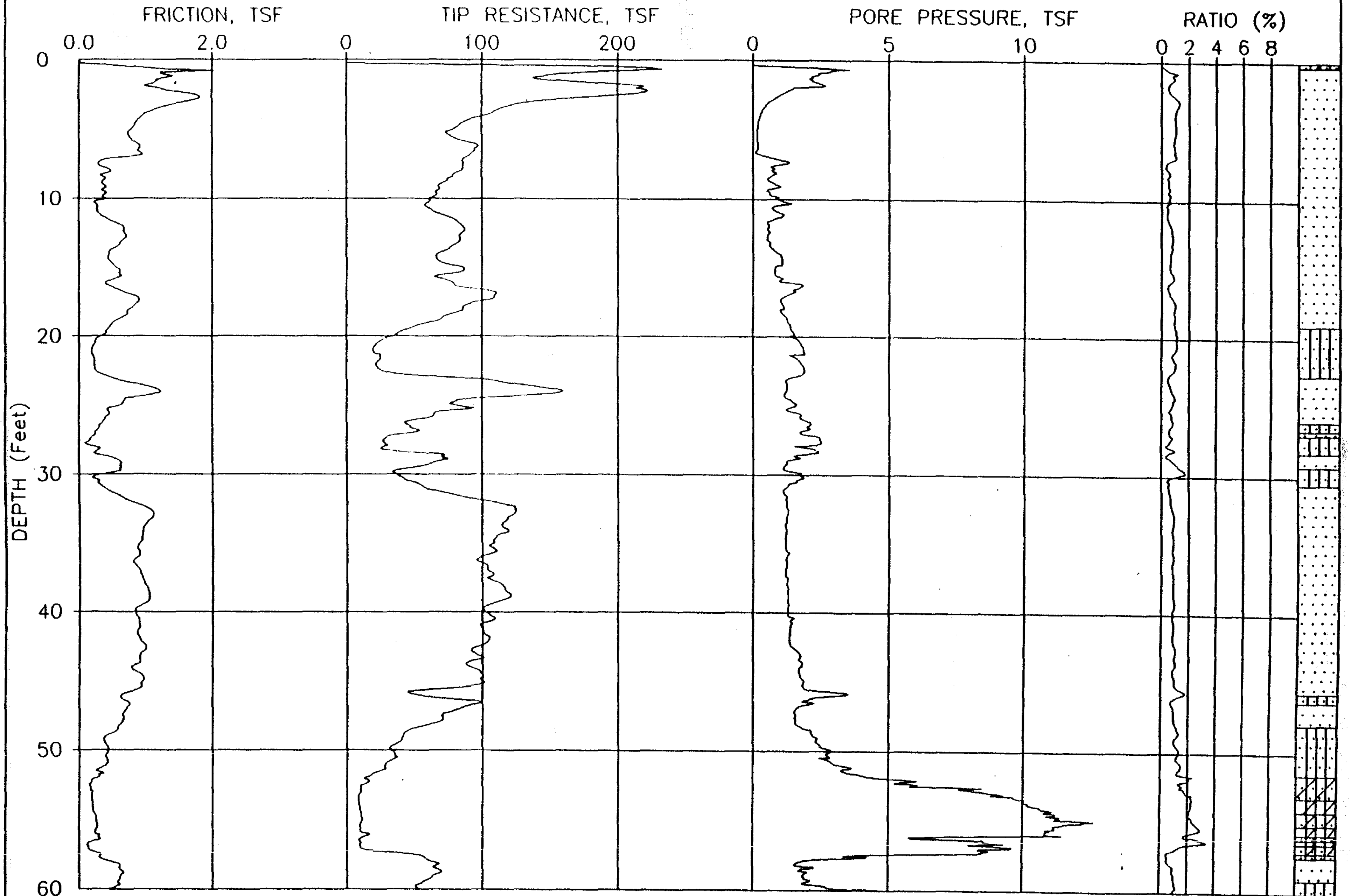
CONE NUMBER: F7.5CKEW943

DATE: 04-02-1998

PLATE: 2 OF 2

FUGRO GE( )ICES,INC



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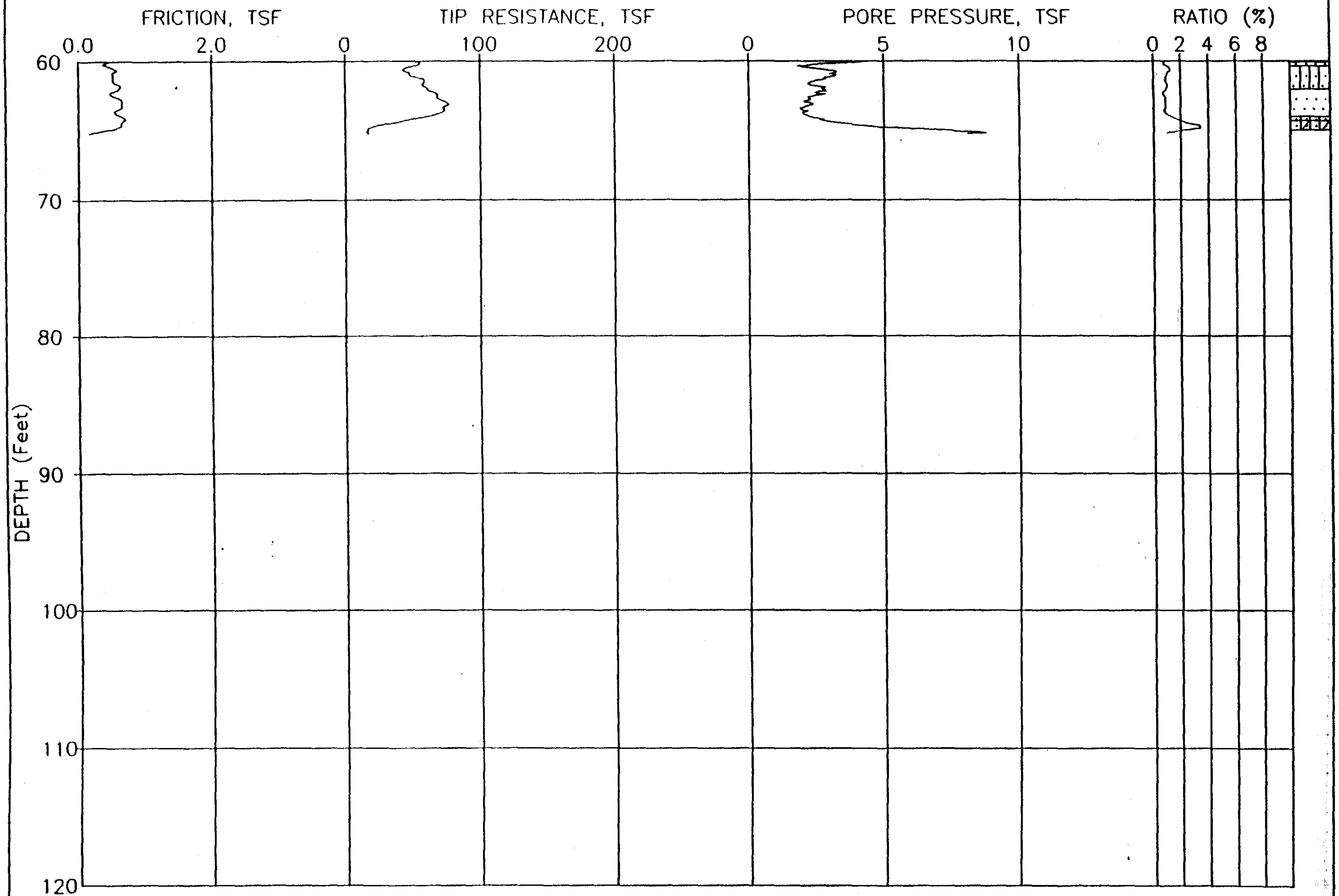
CONE NUMBER: F7.5CKEW943

DATE: 04-09-1998

PLATE: 1 OF 2

FUGRO GEOSCIENCES,INC



JOB NUMBER: 98-1023

ELEVATION: 0.00

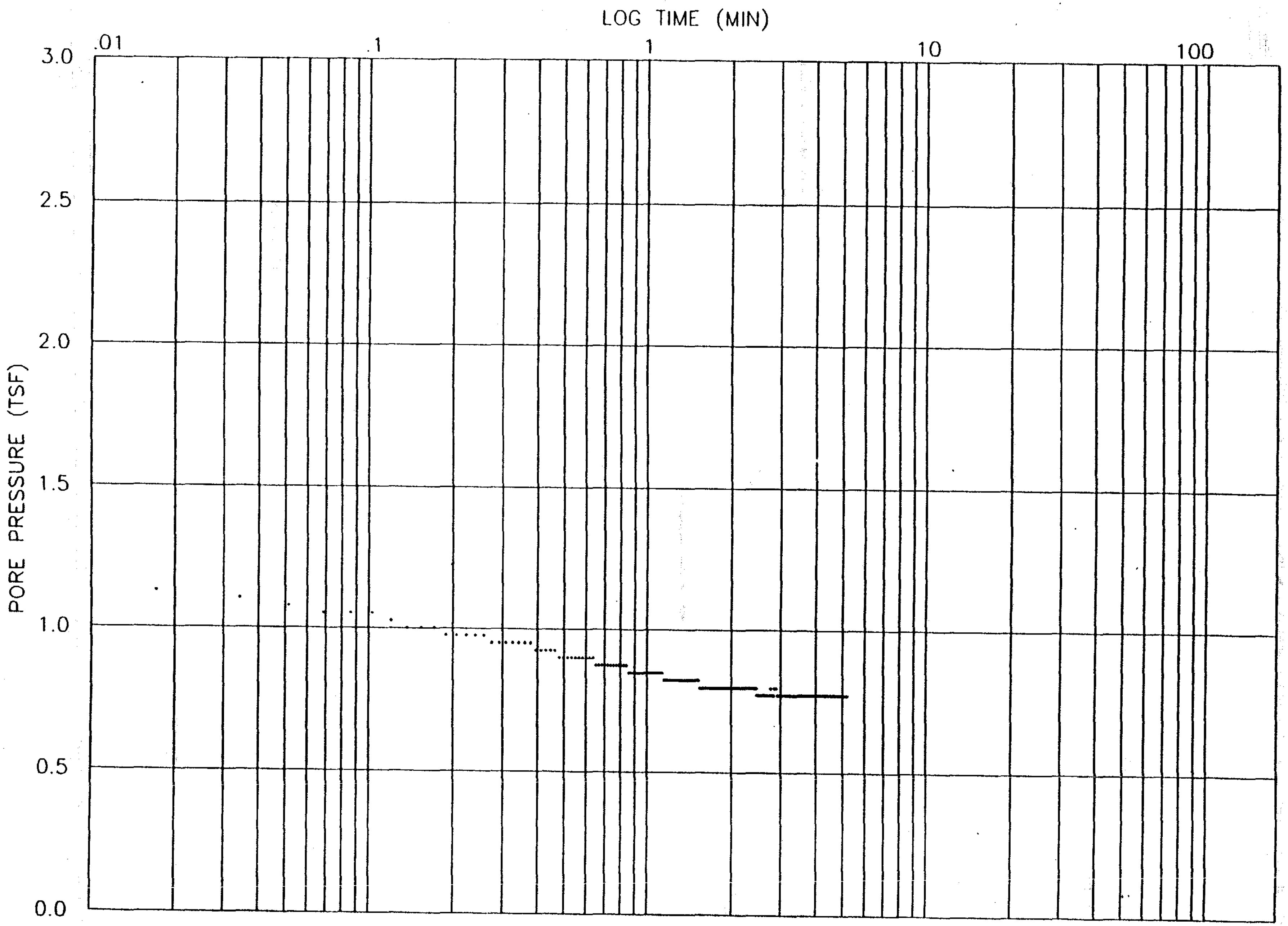
CPT NUMBER: 17Q024

CONE NUMBER: F7.5CKEW943

DATE: 04-09-1998

PLATE: 2 OF 2

FUGRO GEOS[illegible]ICES,INC



CPT NUMBER: 17Q018
JOB NUMBER: 98-1023

DISSIPATION TEST

DEPTH: 27.4 FEET
DATE: 01-03-1980

FUGRO GEOSCIENCES, INC.

FUGRO GEOSCIENCES, INC. **CPT DAILY LOG**

Page 1 of 1 Fugro Job No. 0301-1023 Client Job No./ Description NTC ORlando, Fla.

PERSONNEL:

Operator: AlberT Helper: Daniel & John. Date: 4/1/98

EQUIPMENT:

Cone Rig: 5040 Grout Truck: 5061 Pick-Up: 12096 Decon Unit: yes

Client Contact ABB MILEAGE: Start ____ Finish ____ Total ____

DAILY ACTIVITY FROM	TO	ACTIVITY	FOOTAGE (FEET)	HOURLY WORK (MIN.)	MOVING/ STANDBY DECON. (MIN.)
9:00	10:00	MOBe to site			
10:00	10:30	Lunch			
10:30	11:30	off load equip			
11:30	12:45	Entry Decon			
12:45	1:30	set up For Decon			
1:30	2:30	CPT- 17Q003	65.9 Ft		
2:30	3:15	CPT- 17 Q005	66 Ft		
3:15	4:05	CPT- 17 Q 016	66.5 Ft		
4:05	4:35	CPT- 17 Q 018	67.5 Ft		
4:35	4:40	Dis at 27.5 Ft			
4:40	5:10	CPT- Con.			
5:10	6:30	GrouT			
Payroll Hrs: (Operator) (Helper)		Daily Totals	265.9		

Operators Comments Grout 2 CPTs to 42 Ft and 2 CPTS to 35 F

Operators Signature Albert Fonseca Client Approval Mark C Todaro

FUGRO GEOSCIENCES, INC.

CPT DAILY LO

Page 1 of 1 Fugro Job No. 0301-1023 Client Job No./ Description NTC ORlonDo, Flo.

PERSONNEL:

Operator: AlberT Helper: Daniel & John Date: 4/2/98

EQUIPMENT:

Cone Rig: 5040 Grout Truck: 5061 Pick-Up: 12096 Decon Unit: yes

Client Contact ABB **MILEAGE:** Start ____ Finish ____ Total ____

DAILY ACTIVITY FROM	TO	ACTIVITY	FOOTAGE (FEET)	HOURLY WORK (MIN.)	MOVIN STANDB DECON (MIN.
7:00	7:30	ON site			
7:30	7:40	Move			
7:40	—	CPT-17Q011	66 Ft		
—	—	(computer died twice TD about 20 Ft			
—	8:50	Pull out & retry)			
8:50	9:35	CPT-17Q022	68 Ft		
9:35	10:25	CPT-17Q008	65 Ft		
10:25	10:45	Decon			
10:45	~~11:00~~	set Piezometer 17PZ001A (Hit water			
—	—	Line at 3 Ft, Punctured through			
—	11:00	water line)			
11:00	12:00	Lunch			
12:00	1:00	StandBy			
1:00	1:25	set Piezometer 17PZ001A	14 Ft		
1:25	2:00	set Piezometer 17PZ002C	46 Ft		
2:00	2:30	Decon			
2:30	2:50	set Piezometer 17PZ003A	14 Ft		
2:50	3:25	set Piezometer 17PZ004C	46 Ft		
3:25	3:50	Decon			
3:50	4:00	set Piezometer 17PZ005A	14 Ft		
4:00	4:40	set Piezometer 17PZ006C	46 Ft		
4:40	5:30	Decon			

Payroll Hrs: (Operator) (Helper) Daily Totals ~~379~~ 379 190

Operators Comments used 7 dummy tips / shallow Piezometers 3 1 inch riser + 6 1 inch screen 3 top & 3 Bottom caps / 3 3/4 inch screen & 27 3/4 inch Risers 3 Top & 3 Bottom cap.

Operators Signature Albert Fonseca Client Approval Mark C Taber

FUGRO GEOSCIENCES, INC. **CPT DAILY LOG**

Page 1 of 1 Fugro Job. No. 0301-1023 Client Job. No. / Description NTC Orlando FL McCoy Annex

PERSONNEL:

Operator: Albert Helper: Daniel & John Date: 4/3/98

EQUIPMENT:

Cone Rig: 5040 Grout Truck: 5061 Pick-Up: 12096 Decon Unit: 420

Client Contact: ABB MILEAGE: Start: ______ Finish: ______ Total: ______

DAILY ACTIVITY FROM	TO	ACTIVITY	FOOTAGE (FEET)	HOURLY WORK (MIN.)	MOVING/ STANDBY DECON (MIN.)
7:00	8:00	StandBy			
8:00	-	water sample 17Q00406	35'		
-	9:40	(try twice)			
9:40	10:15	Sample 17Q00406	40'		
10:15	10:45	Sample 17Q00406	45'		
10:45	11:50	Sample 17Q00406	50'		
11:50	12:10	Sample 17Q00406	55'		
12:10	1:10	Lunch			
1:10	1:30	Con. sample at 55 ft			
1:30	2:40	sample 17Q00406	60'		
2:40	3:30	Decon			
3:30	4:10	water sample 17QO	40'		
4:10	4:45	Sample 17QO	50'		
4:45	5:20	Sample 17QO	60'		
5:20	6:30	~~Decon~~ Grout			
Payroll Hours: (Operator	) (Helper	) Daily Totals	435'		

Operators Comments sample Holes grouted to 40 ft (Grout total 80 ft)

Operators Signature Albert Fonseca Client Approval Mark C Tr[illegible]

FUGRO GEOSCIENCES, INC. **CPT DAILY LOG**

Page 1 of 1 Fugro Job. No. 0301-1023 Client Job. No. / Description NTC Orlando, Fla.

PERSONNEL:

Operator: Albert Helper: Daniel + John. Date: 4/4/98

EQUIPMENT:

Cone Rig: 5040 Grout Truck: 5061 Pick-Up: 12046 Decon Unit: 420

Client Contact: ABB MILEAGE: Start: ______ Finish: ______ Total: ______

DAILY ACTIVITY FROM	TO	ACTIVITY	FOOTAGE (FEET)	HOURLY WORK (MIN.)	MOVING STANDBY DECON (MIN.)
7:00	8:00	Decon			
8:00	8:45	water sample 17Q003	40 ft		
8:45	9:15	sample 17Q003	50'		
9:15	9:50	sample 17Q003	60'		
9:50	10:35	Decon			
10:35	11:15	water sample 17Q013	40'		
11:15	11:45	sample 17Q013	50'		
11:45	12:30	sample 17Q013	60'		
12:30	1:00	Lunch			
1:00	1:40	Decon			
1:40	2:15	water sample 17QQ	40'		
2:15	2:45	sample 17QQ	50'		
2:45	3:20	sample 17QQ	60'		
3:20	3:55	Decon			
3:55	4:30	water sample 17Q017	40'		
4:30	5:00	sample 17Q017	50'		
5:00	5:30	sample 17Q017	60'		
5:30	7:00	Grout			
Payroll Hours: (Operator) (Helper)		Daily Totals	600'		

Operators Comments: Sample Holes grouted to 40'
(Grout total 160 ft)

Operators Signature: Albert [signature]   Client Approval: [signature]

FUGRO GEOSCIENCES, INC. CPT DAILY LOG

Page 1 of 1 Fugro Job. No. 0301-1023 Client Job. No. / Description NTC ORlando, Fla. McCoy ANNex

PERSONNEL:

Operator: AlberT Helper: Daniel + John Date: 4/5/98

EQUIPMENT:

Cone Rig: 5040 Grout Truck: 5061 Pick-Up: 12096 Decon Unit: Yes

Client Contact: ABB MILEAGE: Start: ______ Finish: ______ Total: ______

DAILY ACTIVITY FROM	TO	ACTIVITY	FOOTAGE (FEET)	HOURLY WORK (MIN.)	MOVING/ STANDBY/ DECON (MIN.)
		OFF			
Payroll Hours: (Operator) (Helper)		Daily Totals			

Operators Comments

Operators Signature Albert [signature] Client Approval [signature]

FUGRO GEOSCIENCES, INC. **CPT DAILY LOG**

Page 1 of 2 Fugro Job. No. 0301-1023 Client Job. No. / Description NTC ORLANDO, Fla McCoy ANNEX

PERSONNEL:

Operator: Albert Helper: Daniels John Date: 4/6/98

EQUIPMENT:

Cone Rig: 5040 Grout Truck: 5061 Pick-Up: 12096 Decon Unit: yes

Client Contact: ABB MILEAGE: Start: Finish: Total:

DAILY ACTIVITY FROM	TO	ACTIVITY	FOOTAGE (FEET)	HOURLY WORK (MIN.)	MOVING/ STANDBY/ DECON (MIN.)
7:00	7:45	Decon			
7:45	8:00	Move			
8:00	8:30	Water Sample 17Q01A	40'		
8:30	9:00	Sample 17Q01A	50'		
9:00	9:30	Sample 17Q01A	60'		
9:30	10:00	Decon			
10:00	11:00	Water Sample 17Q022	10'		
11:00	11:30	Sample 17Q022	20'		
11:30	11:50	Sample 17Q022	30'		
11:50	12:45	Sample 17Q022	40'		
12:45	1:15	Lunch			
1:15	1:40	Con. Sample at 40 ft			
1:40	2:10	Sample 17Q022	50'		
2:10	2:40	Sample 17Q022	60'		
2:40	3:20	Decon			
3:20	3:45	Water Sample 17Q023	40'		
3:45	4:10	Sample 17Q023	50'		
4:10	4:45	Sample 17Q023	60'		
4:45	5:15	Decon			
5:15	5:35	Water Sample 17Q026	10'		
Payroll Hours: (Operator) (Helper)		Daily Totals	520'		

Operators Comments Sample Holes grouted to 40' (Grout total 120 ft)

Operators Signature Albert [signature]   Client Approval Mark C [signature]

FUGRO GEOSCIENCES, INC. **CPT DAILY LOG**

Page 2 of 2 Fugro Job. No. 0301-1023 Client Job. No. / Description NTC Orlando, Fla. McCoy ANNex

PERSONNEL:

Operator: Albert Helper: Daniel, John Date: 4/6/98

EQUIPMENT:

Cone Rig: 5040 Grout Truck: 5061 Pick-Up: 12096 Decon Unit: yes

Client Contact: ABB MILEAGE: Start: ______ Finish: ______ Total: ______

DAILY ACTIVITY FROM	TO	ACTIVITY	FOOTAGE (FEET)	HOURLY WORK (MIN.)	MOVING/ STANDBY DECON (MIN.)
5:35	6:00	Sample 17Q026	20'		
6:00	6:30	Sample 17Q026.	30'		
6:30	7:00	secuire equip			
Payroll Hours: (Operator) (Helper)		Daily Totals	50'		

Operators Comments ____________________

Operators Signature Albert Tinoco Client Approval Mark C Taylor

FUGRO GEOSCIENCES, INC. **CPT DAILY LOG**

Page 1 of 2 Fugro Job. No. 0301-1023 Client Job. No. / Description NTC ORlando, Fla. McCoy ANNEX

PERSONNEL:

Operator: AlberT Helper: Daniel + John Date: 4/7/98

EQUIPMENT:

Cone Rig: 5040 Grout Truck: 5061 Pick-Up: 12096 Decon Unit: yes

Client Contact: ABB MILEAGE: Start: ______ Finish: ______ Total: ______

DAILY ACTIVITY FROM	TO	ACTIVITY	FOOTAGE (FEET)	HOURLY WORK (MIN.)	MOVING STANDBY DECON (MIN.)
7:00	8:00	water sample 17Q026	40'		
8:00	8:45	Sample 17Q026	50'		
8:45	9:25	sample 17Q026	60'		
9:25	10:00	Decon			
10:00	10:20	Water sample 17Q020	10'		
10:20	10:55	sample 17Q020	20'		
10:55	11:25	sample 17Q020	30'		
11:25	11:50	sample 17Q020	40'		
11:50	12:15	sample 17Q020	50'		
12:15	12:55	sample 17Q020	60'		
12:55	1:30	Lunch			
1:30	2:00	Con. sample 60 FT			
2:00	2:30	Decon			
2:30	2:50	water sample 17Q021	10'		
2:50	3:10	sample 17Q021	20'		
3:10	3:35	sample 17Q021	30'		
3:35	4:05	sample 17Q021	40'		
4:05	4:40	sample 17Q021	50'		
4:40	5:10	sample 17Q021	60'		
5:10	5:30	Decon			
Payroll Hours: (Operator) (Helper)		Daily Totals	570'		

Operators Comments Sample Holes grouted to 40' (Grout total 120 FT)

Operators Signature Albert [signature] Client Approval [signature]

FUGRO GEOSCIENCES, INC. **CPT DAILY LOG**

Page 2 of 2 Fugro Job. No. 0301-1023 Client Job. No. / Description NTC Orlando, Fla. McCoy ANNEX

PERSONNEL:

Operator: AlberT Helper: Daniel + John Date: 4/7/98

EQUIPMENT:

Cone Rig: 5040 Grout Truck: 5061 Pick-Up: 10096 Decon Unit: yes

Client Contact: ABB MILEAGE: Start: Finish: Total:

DAILY ACTIVITY FROM	TO	ACTIVITY	FOOTAGE (FEET)	HOURLY WORK (MIN.)	MOVING STANDB DECON (MIN.)
5:30	5:50	Water Sample 17Q024	10'		
5:50	6:10	sample	20'		
6:10	6:30	sample	30'		
6:30	7:00	secure equip			
Payroll Hours: (Operator) (Helper)		Daily Totals	60'		

Operators Comments

Operators Signature Albert Fonseca Client Approval [signature]

FUGRO GEOSCIENCES, INC.

CPT DAILY LOG

Page 1 of 2 Fugro Job. No. 0301-1023

Client Job. No. / Description NTC Orlando, Fla. McCoy Annex

PERSONNEL:

Operator: Albert Helper: Daniel & John. Date: 4/8/98

EQUIPMENT:

Cone Rig: 5040 Grout Truck: 5061 Pick-Up: 12096 Decon Unit: 420

Client Contact: ABB MILEAGE: Start: ______ Finish: ______ Total: ______

DAILY ACTIVITY FROM	TO	ACTIVITY	FOOTAGE (FEET)	HOURLY WORK (MIN.)	MOVING STANDBY DECON (MIN.)
7:00	8:00	Water sample 17Q024	40'		
8:00	8:50	Sample 17Q024 (No sample)	50'		
8:50	9:25	Sample 17Q024	60'		
9:25	10:00	Decon			
10:00	10:25	Water sample 17Q019	10'		
10:25	11:00	Sample 17Q019	20'		
11:00	11:20	Sample 17Q019	30'		
11:20	11:50	Sample 17Q019	40'		
11:50	12:20	Sample 17Q019	50'		
12:20	12:55	Sample 17Q019	60'		
12:55	1:30	Lunch			
1:30	2:00	Decon			
2:00	2:45	Water sample 17Q028 (No sample)	10'		
2:45	3:15	Sample 17Q028 (No sample)	20'		
3:15	3:45	Sample 17Q028 (No sample)	25'		
3:45	4:10	Sample 17Q028	30'		
4:10	4:30	Sample 17Q028	40'		
4:30	4:55	Sample 17Q028	50'		
4:55	5:30	Sample 17Q028	60'		
5:30	5:50	Decon			
Payroll Hours: (Operator) (Helper)		Daily Totals	595'		

Operators Comments Sample Holes grouted to 40' (Grout total 120 FT)

Operators Signature Albert [signature]

Client Approval [signature]

FUGRO GEOSCIENCES, INC. **CPT DAILY LOG**

Page 2 of 2 Fugro Job. No. 0301-1023 Client Job. No. / Description NTC Orlando Fla. McCoy ANNex

PERSONNEL:

Operator: Albert Helper: Daniel & John Date: 4/8/98

EQUIPMENT:

Cone Rig: 5040 Grout Truck: 5061 Pick-Up: 12096 Decon Unit: 420

Client Contact: ABB MILEAGE: Start: ______ Finish: ______ Total: ______

DAILY ACTIVITY FROM	TO	ACTIVITY	FOOTAGE (FEET)	HOURLY WORK (MIN.)	MOVING STANDBY DECON (MIN.)
5:50	6:15	water sample 17Q025	10'		
6:15	6:30	sample 17Q025	20'		
6:30	7:00	sample 17Q025 (No sample)	30'		
7:00	7:15	sample 17Q025	35'		
7:15	7:30	secure equip			
Payroll Hours: (Operator) (Helper)		Daily Totals	95'		

Operators Comments ______

Operators Signature Albert [signature] Client Approval [signature]

FUGRO GEOSCIENCES, INC.

CPT DAILY LOG

Page 1 of 2 Fugro Job. No. 0301-1023

Client Job. No. / Description NTC Orlando Fla McCoy Annex

PERSONNEL:

Operator: Albert Helper: Daniel + John Date: 4/9/98

EQUIPMENT:

Cone Rig: 5040 Grout Truck: 5061 Pick-Up: 12096 Decon Unit: yes

Client Contact: ABB MILEAGE: Start: ______ Finish: ______ Total: ______

DAILY ACTIVITY FROM	TO	ACTIVITY	FOOTAGE (FEET)	HOURLY WORK (MIN.)	MOVING STANDBY DECON (MIN.)
7:00	8:00	Con. sample 17Q025 35 ft			
8:00	8:40	Sample 17Q025	40'		
8:40	9:00	Sample 17Q025	50'		
9:00	9:30	Sample 17Q025	60'		
9:30	10:00	Decon			
10:00	10:45	water sample 17Q027	30'		
10:45	11:15	sample	40'		
11:15	11:50	sample	50'		
11:50	12:30	Lunch			
12:30	1:00	Decon			
1:00	1:20	water sample 17Q031	10'		
1:20	1:50	Sample 17Q031	20'		
1:50	2:15	Sample 17Q031	30'		
2:15	2:40	Sample 17Q031	40'		
2:40	3:15	Sample 17Q031	50'		
3:15	3:50	Sample 17Q031	60'		
3:50	4:20	Decon			
4:20	5:00	water sample 17Q012	60'		
5:00	5:20	set up for CPT			
5:20	6:15	CPT - 17Q020	86'		
Payroll Hours: (Operator) (Helper)		Daily Totals	626'		

Operators Comments Holes grout to 40' (Grout total 240 FT)

Operators Signature Albert [signature] Client Approval [signature]

FUGRO GEOSCIENCES, INC. **CPT DAILY LOG**

Page 2 of 2 Fugro Job. No. 0301-1023

Client Job. No. / Description NTC ORlondo, Fla. McCoy ANNex

PERSONNEL:

Operator: AlberT Helper: Daniel Date: 4/9/98

EQUIPMENT:

Cone Rig: 5040 Grout Truck: 5061 Pick-Up: 12096 Decon Unit: yes

Client Contact: ABB MILEAGE: Start: ______ Finish: ______ Total: ______

DAILY ACTIVITY FROM	TO	ACTIVITY	FOOTAGE (FEET)	HOURLY WORK (MIN.)	MOVING STANDBY DECON (MIN.)
6:15	7:00	CPT- 17Q024	65'		
7:00	8:00	Exit Decon			
Payroll Hours: (Operator) (Helper)		Daily Totals	65'		

Operators Comments (used 5 55 gal Drums)

Operators Signature Albert [signature] Client Approval

APPENDIX H

FIELD SCREENING GROUNDWATER ANALYTICAL RESULTS (ON-SITE LABORATORY), GROUNDWATER EVALUATION

Appendix H
Summary of Positive Detections in Onsite Field Screening
Groundwater Analytical Results, Groundwater Evaluation, Phase II,
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Identifier	FDEPGCTL		FEDMCL	RBC for Tap Water		17Q00101	17Q00102	17Q00103	17Q00104	17Q00105	17Q00105	17Q00201	17Q00202	17Q00203	17Q00204	17Q00204	17Q00205	17Q00301
Sampling Date						3/18/98	3/18/98	3/18/98	3/18/98	3/23/98	3/23/98	3/19/98	3/19/98	3/19/98	3/19/98	3/19/98	3/19/98	3/19/98
Depth bls (ft)						5-9	10-14	15-19	20-24	25-29	25-29	5-9	10-14	15-19	20-24	20-24	25-29	5-9
Volatile Organics, ug/L																		
1,1-Dichloroethene	7	p/c	7	0.044		2.4	82	26	4.7	U	U	82	130	100	4	4	U	4.1
Benzene	1	p/c	5	0.36	c	U	0.7	1.2	U	U	U	U	1.6	2.5	U	U	U	U
cis-1,2-Dichloroethene	70	p/st	70	61	n	40	1500	1900	340	U	U	2900	5200	3500	[illegible]	[illegible]	2.5	33
Ethylbenzene	30	s/st	700	1,300	n	U	U	0.6	U	U	U	U	0.8	1.2	U	U	U	U
m/p-Xylene	20	s/st	10,000	1,400	n	U	U	1.1	U	U	U	3.8	3.9	3.2	U	U	U	U
o-Xylene	20	s/st	10,000	1,400	n	U	0.5	0.7	U	U	U	U	0.6	1.3	U	U	U	U
Tetrachloroethene	3	p/c	5	1.1	c	U	U	1.8	U	U	U	U	U	U	U	U	U	U
Toluene	40	s/st	1,000	750	n	U	2.4	7.7	U	U	U	9.6	14	12	U	U	U	U
trans-1,2-Dichloroethene	100	p/st	100	120	n	1.0	16	5.4	1.3	U	U	57	92	80	1.5	1	U	1.2
Trichloroethene	3	p/c	5	1.6	c	2.0	950	970	320	U	U	680	1600	[illegible]	[illegible]	[illegible]	U	[illegible]
Vinyl Chloride	1	p/c	2	0.019	c	77	620	250	81	U	U	2100	1800	1700	[illegible]	[illegible]	U	[illegible]

Appendix H
Summary of Positive Detections in Onsite Field Screening
Groundwater Analytical Results, Groundwater Evaluation, Phase II,
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Identifier	FDEPGCTL		FEDMCL	RBC for Tap Water		17Q00302	17Q00303	17Q00304	17Q00305	17Q00306	17Q00306	17Q00307	17Q00308	17Q00401	17Q00401	17Q00402	17Q00403	17Q00404
Sampling Date						3/19/98	3/19/98	3/19/98	3/20/98	4/4/98	4/4/98	4/4/98	4/4/98	3/20/98	3/20/98	3/20/98	3/20/98	3/20/98
Depth bls (ft)						10-14	15-19	20-24	25-29	39-40	39-40	49-50	59-60	5-9	5-9	10-14	15-19	20-24
Volatile Organics, ug/L																		
1,1-Dichloroethene	7	p/c	7	0.044		16	58	11	U	U	U	U	U	5.4	6.2	[illegible]	[illegible]	1.4
Benzene	1	p/c	5	0.36	c	U	1.6	U	U	US	U	U	US	U	U	U	U	U
cis-1,2-Dichloroethene	70	p/st	70	61	n	810	3200	560	9	6.4	6.9	12	8.9	130 E	[illegible] E	[illegible]	[illegible]	[illegible]
Ethylbenzene	30	s/st	700	1,300	n	U	1.5	U	U	US	U	U	US	U	U	U	U	U
m/p-Xylene	20	s/st	10,000	1,400	n	U	3.3	U	U	US	U	U	US	U	U	U	U	U
o-Xylene	20	s/st	10,000	1,400	n	U	1.9	U	U	US	U	U	US	U	U	U	0.6	U
Tetrachloroethene	3	p/c	5	1.1	c	U	1.1	U	U	U	U	U	U	U	U	U	U	U
Toluene	40	s/st	1,000	750	n	0.98	38	4.9	U	US	U	U	US	U	U	2.1	5	U
trans-1,2-Dichloroethene	100	p/st	100	120	n	15	80	10	U	U	U	0.6	U	1	1.2	12	3.5	2.9
Trichloroethene	3	p/c	5	1.6	c	18	5.6	11	U	8.9	7	4.6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Vinyl Chloride	1	p/c	2	0.019	c	650	1400	240	1.2	10	12	8.4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Appendix H
Summary of Positive Detections in Onsite Field Screening
Groundwater Analytical Results, Groundwater Evaluation, Phase II,
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Identifier	FDEPGCTL		FEDMCL	RBC for Tap Water		17Q00405	17Q00406	17Q00407	17Q00408	17Q00409	17Q00410	17Q00411	17Q00501	17Q00502	17Q00503	17Q00503	17Q00504	17Q00505
Sampling Date						3/20/98	4/3/98	4/3/98	4/3/98	4/3/98	4/3/98	4/3/98	3/21/98	3/21/98	3/21/98	3/21/98	3/21/98	3/21/98
Depth bls (ft)						25-29	34-35	39-40	44-45	49-50	54-55	59-60	5-9	10-14	15-19	15-19	20-24	25-29
Volatile Organics, ug/L																		
1,1-Dichloroethene	7	p/c	7	0.044		U	U	U	U	U	U	U	U	U	U	U	U	U
Benzene	1	p/c	5	0.36	c	U	U	U	U	U	U	U	U	U	U	U	U	U
cis-1,2-Dichloroethene	70	p/st	70	61	n	1.5	0.7	U	U	4.4	13	10	1.1 J	8.2 J	2.8 J	3.4 J	U	U
Ethylbenzene	30	s/st	700	1,300	n	U	U	U	U	U	U	U	U	U	U	U	U	U
m/p-Xylene	20	s/st	10,000	1,400	n	U	U	U	U	U	U	U	U	U	U	U	U	U
o-Xylene	20	s/st	10,000	1,400	n	U	U	U	U	U	U	U	U	U	U	U	U	U
Tetrachloroethene	3	p/c	5	1.1	c	U	U	U	U	U	0.7	U	U	U	U	U	U	U
Toluene	40	s/st	1,000	750	n	U	U	U	U	U	U	U	U	U	U	U	U	U
trans-1,2-Dichloroethene	100	p/st	100	120	n	U	U	U	U	U	U	U	U	U	U	U	U	U
Trichloroethene	3	p/c	5	1.6	c	4.5	11	9.6	7.5	16	33 E	32 E	U	U	2.0	2.7	U	2.1
Vinyl Chloride	1	p/c	2	0.019	c	U	U	U	U	8.3	2.6	4.9	U	U	U	U	U	U

Appendix H
Summary of Positive Detections in Onsite Field Screening
Groundwater Analytical Results, Groundwater Evaluation, Phase II,
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Identifier	FDEPGCTL		FEDMCL	RBC for Tap Water		17Q00601	17Q00602	17Q00603	17Q00604	17Q00605	17Q00701	17Q00702	17Q00703	17Q00704	17Q00705	17Q00801	17Q00802	17Q00803
Sampling Date						3/21/98	3/21/98	3/21/98	3/21/98	3/21/98	3/20/98	3/20/98	3/20/98	3/20/98	3/20/98	3/20/98	3/20/98	3/21/98
Depth bls (ft)						5-9	10-14	15-19	20-24	25-29	5-9	10-14	15-19	20-24	25-29	10-14	15-19	20-24
Volatile Organics, ug/L																		
1,1-Dichloroethene	7	p/c	7	0.044		U	U	U	U	U	U	U	U	U	U	U	U	U
Benzene	1	p/c	5	0.36	c	U	U	U	U	U	U	U	U	U	U	U	U	U
cis-1,2-Dichloroethene	70	p/st	70	61	n	1.9 J	2.4 J	2.3 J	U	U	U	U	U	U	U	U	U	U
Ethylbenzene	30	s/st	700	1,300	n	U	U	U	U	U	U	U	U	U	U	U	U	U
m/p-Xylene	20	s/st	10,000	1,400	n	U	U	U	U	U	U	U	U	U	U	U	U	U
o-Xylene	20	s/st	10,000	1,400	n	U	U	U	U	U	U	U	U	U	U	U	U	U
Tetrachloroethene	3	p/c	5	1.1	c	U	U	U	U	U	U	U	U	U	U	U	U	U
Toluene	40	s/st	1,000	750	n	U	U	U	U	U	U	U	U	U	U	U	U	U
trans-1,2-Dichloroethene	100	p/st	100	120	n	U	U	U	U	U	U	U	U	U	U	U	U	U
Trichloroethene	3	p/c	5	1.6	c	U	U	0.8	U	U	U	U	U	U	U	U	U	U
Vinyl Chloride	1	p/c	2	0.019	c	U	U	U	U	U	U	U	U	U	U	U	U	U

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Summary of Positive Detections in Onsite Field Screening
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Identifier	FDEPGCTL	FEDMCL	RBC for Tap Water	17Q00804	17Q00901	17Q00902	17Q00902	17Q00903	17Q00904	17Q00905	17Q01001	17Q01002	17Q01003	17Q01004	17Q01004	17Q01005
Sampling Date				3/21/98	3/21/98	3/21/98	3/21/98	3/21/98	3/21/98	3/21/98	3/22/98	3/22/98	3/22/98	3/22/98	3/22/98	3/22/98
Depth bls (ft)				25-29	5-9	10-14	10-14	15-19	20-24	25-29	4-9	10-14	15-19	20-24	20-24	25-29
Volatile Organics, ug/L																
1,1-Dichloroethene	7 p/c	7	0.044	U	U	U	U	U	U	U	U	U	U	[redacted]	[redacted]	3.4
Benzene	1 p/c	5	0.36 c	U	U	U	U	U	U	U	U	U	U	U	U	U
cis-1,2-Dichloroethene	70 p/st	70	61 n	U	U	U	U	U	U	U	U	U	23 E	[redacted]	[redacted]	[redacted]
Ethylbenzene	30 s/st	700	1,300 n	U	U	U	U	U	U	U	U	U	U	U	U	U
m/p-Xylene	20 s/st	10,000	1,400 n	U	U	U	U	U	U	U	U	U	U	U	U	U
o-Xylene	20 s/st	10,000	1,400 n	U	U	U	U	U	U	U	U	U	U	U	U	U
Tetrachloroethene	3 p/c	5	1.1 c	U	U	U	U	U	U	U	U	U	U	U	U	1.7
Toluene	40 s/st	1,000	750 n	U	U	U	U	U	U	U	U	U	U	U	U	U
trans-1,2-Dichloroethene	100 p/st	100	120 n	U	U	U	U	U	U	U	U	U	3	37	31	12.0
Trichloroethene	3 p/c	5	1.6 c	U	U	U	U	U	U	U	U	U	9.9	[redacted]	[redacted]	[redacted]
Vinyl Chloride	1 p/c	2	0.019 c	U	U	U	U	U	U	U	U	U	0.9	[redacted]	[redacted]	[redacted]

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Identifier	FDEPGCTL		FEDMCL	RBC for Tap Water		17Q01006	17Q01007	17Q01008	17Q01101	17Q01102	17Q01102	17Q01103	17Q01104	17Q01105	17Q01201	17Q01202	17Q01203	17Q01204
Sampling Date						4/3/98	4/3/98	4/3/98	3/23/98	3/23/98	3/23/98	3/23/98	3/23/98	3/23/98	3/21/98	3/22/98	3/22/98	3/22/98
Depth bls (ft)						39-40	49-50	59-60	4-9	10-14	10-14	15-19	20-24	25-29	5-9	10-14	15-19	20-24
Volatile Organics, ug/L																		
1,1-Dichloroethene	7	p/c	7	0.044		U	U	U	U	0.9	0.9	3.2	U	U	U	[illegible]	[illegible]	3.3
Benzene	1	p/c	5	0.36	c	US	U	U	U	U	U	1.6	U	U	U	U	U	U
cis-1,2-Dichloroethene	70	p/st	70	61	n	5.1	4.2	1.2	U	120	110	67 E	36 E	0.6	8.2	[illegible]	[illegible]	[illegible]
Ethylbenzene	30	s/st	700	1,300	n	US	U	U	U	U	U	U	U	U	U	U	U	U
m/p-Xylene	20	s/st	10,000	1,400	n	US	U	U	U	U	U	U	U	U	U	U	U	U
o-Xylene	20	s/st	10,000	1,400	n	US	U	U	U	U	U	U	U	U	U	U	U	U
Tetrachloroethene	3	p/c	5	1.1	c	U	U	U	U	U	U	3.4	U	U	U	0.7	U	U
Toluene	40	s/st	1,000	750	n	US	U	U	U	U	U	U	U	U	U	U	1.7	U
trans-1,2-Dichloroethene	100	p/st	100	120	n	U	U	U	U	7.2	7.0	27 E	4.0	U	U	37 E	37 E	6
Trichloroethene	3	p/c	5	1.6	c	9.9	11	4.8	U	4.5	3.9	65 E	40 E	1.9	U	[illegible]	[illegible]	[illegible]
Vinyl Chloride	1	p/c	2	0.019	c	U	U	U	U	30	28	77 E	29 E	U	2	[illegible]	[illegible]	[illegible]

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Identifier	FDEPGCTL		FEDMCL	RBC for Tap Water		17Q01205	17Q01206	17Q01301	17Q01302	17Q01303	17Q01304	17Q01305	17Q01306	17Q01307	17Q01308	17Q01401	17Q01402	17Q01403
Sampling Date						3/22/98	4/9/98	3/22/98	3/22/98	3/22/98	3/22/98	3/22/98	4/4/98	4/4/98	4/4/98	3/24/98	3/24/98	3/24/98
Depth bls (ft)						25-29	59-60	5-9	10-14	15-19	20-24	25-29	39-40	49-50	59-60	5-9	10-14	15-19
Volatile Organics, ug/L																		
1,1-Dichloroethene	7	p/c	7	0.044		U	U	U	3	6	15	0.5	U	U	U	U	U	U
Benzene	1	p/c	5	0.36	c	U	U	U	U	U	U	U	US	U	U	U	U	U
cis-1,2-Dichloroethene	70	p/st	70	61	n	1.2	0.7	U	140	710	1100	180	5.2	0.9	0.9	5.4	15	0.6
Ethylbenzene	30	s/st	700	1,300	n	U	U	U	U	U	U	U	US	U	U	U	U	U
m/p-Xylene	20	s/st	10,000	1,400	n	U	U	U	U	U	U	U	US	U	U	U	U	U
o-Xylene	20	s/st	10,000	1,400	n	U	U	U	U	U	U	U	US	U	U	U	U	U
Tetrachloroethene	3	p/c	5	1.1	c	U	U	U	U	U	U	U	U	U	U	U	U	U
Toluene	40	s/st	1,000	750	n	U	U	U	U	U	0.7	U	US	U	U	U	U	U
trans-1,2-Dichloroethene	100	p/st	100	120	n	U	U	U	14	33 E	24 E	4.4	U	U	U	U	2.0	U
Trichloroethene	3	p/c	5	1.6	c	U	0.7	U	200	1200	680	10	32	[illegible]	2.3	U	U	U
Vinyl Chloride	1	p/c	2	0.019	c	U	U	U	13	53	45 E	3.3	U	U	U	U	[illegible]	U

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Identifier	FDEPGCTL		FEDMCL	RBC for Tap Water		17Q01404	17Q01405	17Q01405	17Q01501	17Q01502	17Q01503	17Q01504	17Q01505	17Q01601	17Q01602	17Q01603	17Q01603	17Q01604
Sampling Date						3/24/98	3/24/98	3/24/98	3/24/98	3/24/98	3/24/98	3/24/98	3/24/98	3/25/98	3/25/98	3/25/98	3/25/98	3/25/98
Depth bls (ft)						20-24	25-29	25-29	4-9	10-14	15-19	20-24	25-29	4-9	10-14	15-19	15-19	20-24
Volatile Organics, ug/L																		
1,1-Dichloroethene	7	p/c	7	0.044		U	U	U	U	U	2.7	U	U	U	2.3	[illegible]	[illegible]	1.0
Benzene	1	p/c	5	0.36	c	U	U	U	U	U	U	U	U	U	U	U	U	U
cis-1,2-Dichloroethene	70	p/st	70	61	n	U	0.9	0.9	0.7	270	480	U	U	21 E	[illegible]	[illegible]	[illegible]	[illegible]
Ethylbenzene	30	s/st	700	1,300	n	U	U	U	U	U	U	U	U	U	U	U	U	U
m/p-Xylene	20	s/st	10,000	1,400	n	U	U	U	U	U	U	U	U	U	U	U	U	U
o-Xylene	20	s/st	10,000	1,400	n	U	U	U	U	U	U	U	U	U	U	U	U	U
Tetrachloroethene	3	p/c	5	1.1	c	U	U	U	U	U	U	U	U	U	[illegible]	[illegible]	[illegible]	[illegible]
Toluene	40	s/st	1,000	750	n	U	U	U	U	U	U	U	U	U	1.0	0.6	U	U
trans-1,2-Dichloroethene	100	p/st	100	120	n	U	U	U	U	8.2	10	U	U	U	11	[illegible]	[illegible]	12
Trichloroethene	3	p/c	5	1.6	c	U	1.2	1.2	U	1100	2500 E	U	U	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Vinyl Chloride	1	p/c	2	0.019	c	U	U	U	U	U	U	U	U	U	U	U	0.9	U

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Identifier	FDEPGCTL		FEDMCL	RBC for Tap Water		17Q01605	17Q01606	17Q01607	17Q01608	17Q01701	17Q01702
Sampling Date						3/25/98	4/4/98	4/4/98	4/4/98	3/25/98	3/25/98
Depth bls (ft)						25-29	39-40	49-50	59-60	4-9	10-14
Volatile Organics, ug/L											
1,1-Dichloroethene	7	p/c	7	0 044		U	U	U	U	U	U
Benzene	1	p/c	5	0 36	c	U	U	U	U	U	U
cis-1,2-Dichloroethene	70	p/st	70	61	n	100 S	18	U	U	33 E	24 E
Ethylbenzene	30	s/st	700	1,300	n	U	U	U	U	U	U
m/p-Xylene	20	s/st	10,000	1,400	n	U	U	U	U	U	U
o-Xylene	20	s/st	10,000	1,400	n	U	U	U	U	U	U
Tetrachloroethene	3	p/c	5	1.1	c	U	U	U	U	U	8.2
Toluene	40	s/st	1,000	750	n	U	U	U	U	U	U
trans-1,2-Dichloroethene	100	p/st	100	120	n	U	U	U	U	2.8	U
Trichloroethene	3	p/c	5	1.6	c	16	33 E	U	2.1	61000 E	140 E
Vinyl Chloride	1	p/c	2	0 019	c	U	U	U	U	U	U

Identifier	17Q01703	17Q01704	17Q01705	17Q01706	17Q01706	17Q01707	17Q01708
Sampling Date	3/25/98	3/25/98	3/25/98	4/4/98	4/4/98	4/4/98	4/4/98
Depth bls (ft)	15-19	20-24	26-30	39-40	39-40	49-50	59-60
Volatile Organics, ug/L							
1,1-Dichloroethene	2.6	1000 U	5.6	U	U	U	U
Benzene	U	1000 U	U	U	U	U	U
cis-1,2-Dichloroethene	61 E	1000 U	83 E	5.4	5.6	2.2	2.5
Ethylbenzene	U	1000 U	U	U	U	U	U
m/p-Xylene	U	1000 U	U	U	U	U	U
o-Xylene	U	1000 U	U	U	U	U	U
Tetrachloroethene	11	1000 U	7.2	[illegible]	[illegible]	1.3	2.4
Toluene	U	1000 U	7.2	U	U	U	U
trans-1,2-Dichloroethene	12	1000 U	23 E	U	U	U	U
Trichloroethene	340 E	84000 E	190 E	[illegible]	[illegible]	[illegible]	[illegible]
Vinyl Chloride	1.2	1000 U	4.6	U	U	U	U

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Identifier	FDEPGCTL		FEDMCL	RBC for Tap Water		17Q01801	17Q01802	17Q01803	17Q01804	17Q01805	17Q01806	17Q01807	17Q01808	17Q01901	17Q01902	17Q01903	17Q01904	17Q01905
Sampling Date						3/25/98	3/25/98	3/25/98	3/25/98	3/25/98	4/6/98	4/6/98	4/6/98	4/8/98	4/8/98	4/8/98	4/8/98	4/8/98
Depth bls (ft)						4-9	10-14	15-19	20-24	25-29	39-40	49-50	59-60	4-9	10-14	15-19	20-24	25-29
Volatile Organics, ug/L																		
1,1-Dichloroethene	7	p/c	7	0.044		U	U	U	U	US	U	U	U	U	U	U	U	U
Benzene	1	p/c	5	0.36	c	U	U	U	U	U	U	U	U	U	U	U	U	U
cis-1,2-Dichloroethene	70	p/st	70	61	n	28 E	3.3	U	U	40 ES	2.2	U	U	U	US	U	US	U
Ethylbenzene	30	s/st	700	1,300	n	U	U	U	U	U	U	U	U	U	U	U	U	U
m/p-Xylene	20	s/st	10,000	1,400	n	U	U	U	U	U	U	U	U	U	U	U	U	U
o-Xylene	20	s/st	10,000	1,400	n	U	U	U	U	U	U	U	U	U	U	U	U	U
Tetrachloroethene	3	p/c	5	1.1	c	U	U	U	U	US	U	U	U	U	US	U	US	U
Toluene	40	s/st	1,000	750	n	U	U	U	U	U	U	U	U	U	U	U	U	U
trans-1,2-Dichloroethene	100	p/st	100	120	n	U	U	U	U	US	U	U	U	U	US	U	US	U
Trichloroethene	3	p/c	5	1.6	c	1.0	U	U	U	18 S	47 J	U	U	U	US	U	US	U
Vinyl Chloride	1	p/c	2	0.019	c	U	U	U	U	US	U	U	U	U	US	U	US	U

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Identifier	FDEPGCTL		FEDMCL	RBC for Tap Water		17Q01906	17Q02001	17Q02002	17Q02003	17Q02004	17Q02005	17Q02006	17Q02101	17Q02102	17Q02103	17Q02104	17Q02105	17Q02106
Sampling Date						4/8/98	4/7/98	4/7/98	4/7/98	4/7/98	4/7/98	4/7/98	4/7/98	4/7/98	4/7/98	4/7/98	4/7/98	4/7/98
Depth bls (ft)						39-40	9-10	19-20	29-30	39-40	49-50	59-60	9-10	19-20	29-30	39-40	49-50	59-60
Volatile Organics, ug/L																		
1,1-Dichloroethene	7	p/c	7	0.044		U	U	9	U	U	U	U	U	U	U	0.5	U	U
Benzene	1	p/c	5	0.36	c	U	U	U	U	U	U	U	U	U	U	U	U	U
cis-1,2-Dichloroethene	70	p/st	70	61	n	U	23 E	110 E	25 E	6	17 E	3.0	U	32 E	[illegible]	26 E	3.6	2.5
Ethylbenzene	30	s/st	700	1,300	n	U	U	U	U	U	U	U	U	U	U	U	U	U
m/p-Xylene	20	s/st	10,000	1,400	n	U	U	U	U	U	U	U	U	U	U	U	U	U
o-Xylene	20	s/st	10,000	1,400	n	U	U	U	U	U	U	U	U	U	U	U	U	U
Tetrachloroethene	3	p/c	5	1.1	c	U	U	U	U	U	U	U	U	U	0.9	U	U	U
Toluene	40	s/st	1,000	750	n	U	U	U	U	U	U	U	U	U	U	U	U	U
trans-1,2-Dichloroethene	100	p/st	100	120	n	U	14	33 E	1.0	U	U	U	U	4.2	16	U	U	U
Trichloroethene	3	p/c	5	1.6	c	U	1.1	25 E	9.5	1.1	[illegible]	U	U	[illegible]	0.7	2.6	2.2	1.3
Vinyl Chloride	1	p/c	2	0.019	c	U	63 E	4.7	0.7	U	U	U	U	U	U	U	U	U

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Identifier	FDEPGCTL		FEDMCL	RBC for Tap Water		17Q02201	17Q02202	17Q02203	17Q02204	17Q02205	17Q02205	17Q02206	17Q02301	17Q02302	17Q02303	17Q02304	17Q02305	17Q02306
Sampling Date						4/6/98	4/6/98	4/6/98	4/6/98	4/6/98	4/6/98	4/6/98	4/6/98	4/6/98	4/6/98	4/6/98	4/6/98	4/6/98
Depth bls (ft)						9-10	19-20	29-30	39-40	49-50	49-50	59-60	5-9	10-14	15-19	20-24	25-29	39-40
Volatile Organics, ug/L																		
1,1-Dichloroethene	7	p/c	7	0.044		U	U	23 E	3.0	1.0	U	U	U	U	U	US	U	U
Benzene	1	p/c	5	0.36	c	U	U	U	U	U	U	U	U	U	U	U	U	U
cis-1,2-Dichloroethene	70	p/st	70	61	n	U	U	76 E	58 E	44 E	40 E	4.7	U	U	U	US	5.9	6.4
Ethylbenzene	30	s/st	700	1,300	n	U	U	U	U	U	U	U	U	U	U	U	U	U
m/p-Xylene	20	s/st	10,000	1,400	n	U	U	U	U	U	U	U	U	U	U	U	U	U
o-Xylene	20	s/st	10,000	1,400	n	U	U	U	U	U	U	U	U	U	U	US	U	U
Tetrachloroethene	3	p/c	5	1.1	c	U	U	0.6	0.9	U	U	U	U	U	U	US	U	U
Toluene	40	s/st	1,000	750	n	U	U	U	U	U	U	U	U	U	U	U	U	U
trans-1,2-Dichloroethene	100	p/st	100	120	n	U	U	2.2	0.8	U	U	U	U	U	U	US	U	U
Trichloroethene	3	p/c	5	1.6	c	U	U	5	1.9	3.1	U	U	U	U	U	US	U	U
Vinyl Chloride	1	p/c	2	0.019	c	U	U	12	15	3.3	2.2	1.2	U	U	U	US	U	U

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Identifier	FDEPGCTL		FEDMCL	RBC for Tap Water		17Q02307	17Q02308	17Q02401	17Q02402	17Q02402	17Q02403	17Q02404	17Q02406	17Q02501	17Q02502	17Q02503	17Q02504	17Q02505
Sampling Date						4/6/98	4/6/98	4/7/98	4/7/98	4/7/98	4/7/98	4/8/98	4/8/98	4/8/98	4/8/98	4/9/98	4/9/98	4/9/98
Depth bls (ft)						49-50	59-60	9-10	19-20	19-20	29-30	39-40	59-60	9-10	19-20	34-35	39-40	49-50
Volatile Organics, ug/L																		
1,1-Dichloroethene	7	p/c	7	0.044		U	U	U	US	US	U	U	U	U	U	US	U	U
Benzene	1	p/c	5	0.36	c	U	U	U	U	U	U	U	U	U	U	U	U	U
cis-1,2-Dichloroethene	70	p/st	70	61	n	0.6	U	U	US	US	U	U	U	U	U	US	U	U
Ethylbenzene	30	s/st	700	1,300	n	U	U	U	U	U	U	U	U	U	U	U	U	U
m/p-Xylene	20	s/st	10,000	1,400	n	U	U	U	U	U	U	U	U	U	U	U	U	U
o-Xylene	20	s/st	10,000	1,400	n	U	U	U	U	U	U	U	U	U	U	U	U	U
Tetrachloroethene	3	p/c	5	1.1	c	U	U	U	US	US	U	U	U	U	U	US	U	U
Toluene	40	s/st	1,000	750	n	U	U	U	U	U	U	U	U	U	U	U	U	U
trans-1,2-Dichloroethene	100	p/st	100	120	n	U	U	U	US	US	U	U	U	U	U	U	U	U
Trichloroethene	3	p/c	5	1.6	c	U	U	U	US	US	U	U	U	U	U	US	U	U
Vinyl Chloride	1	p/c	2	0.019	c	U	U	U	US	US	U	U	U	U	U	US	U	U

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Naval Training Center, Orlando
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Identifier	FDEPGCTL		FEDMCL	RBC for Tap Water		17Q02506	17Q02601	17Q02602	17Q02603	17Q02604	17Q02605	17Q02606	17Q02606	17Q02701	17Q02702	17Q02703	17Q02703	17Q02704
Sampling Date						4/9/98	4/6/98	4/6/98	4/6/98	4/7/98	4/7/98	4/7/98	4/7/98	4/9/98	4/9/98	4/9/98	4/9/98	4/9/98
Depth bls (ft)						59-60	9-10	19-20	29-30	39-40	49-50	59-60	59-60	6-10	16-20	29-30	29-30	39-40
Volatile Organics, ug/L																		
1,1-Dichloroethene	7	p/c	7	0.044		U	U	1.0	U	U	U	U	U	U	U	U	U	U
Benzene	1	p/c	5	0.36	c	U	U	U	U	U	U	U	U	U	U	U	U	U
cis-1,2-Dichloroethene	70	p/st	70	61	n	U	74 E	100 E	30 E	U	U	2.3	2.0	U	U	20 E	20 E	31 E
Ethylbenzene	30	s/st	700	1,300	n	U	U	U	U	U	U	U	U	U	U	U	U	U
m/p-Xylene	20	s/st	10,000	1,400	n	U	U	U	U	U	U	U	U	U	U	U	U	U
o-Xylene	20	s/st	10,000	1,400	n	U	U	U	U	U	U	U	U	U	U	U	U	U
Tetrachloroethene	3	p/c	5	1.1	c	U	U	U	U	U	U	U	U	U	U	U	U	U
Toluene	40	s/st	1,000	750	n	U	U	U	U	U	U	U	U	U	U	U	U	U
trans-1,2-Dichloroethene	100	p/st	100	120	n	U	33 E	34 E	1.7	U	U	U	U	U	U	U	U	0.7
Trichloroethene	3	p/c	5	1.6	c	U	5.1	140 E	31 E	0.7	U	3.5	2.2	U	U	U	U	U
Vinyl Chloride	1	p/c	2	0.019	c	U	U	1.0	U	U	U	U	U	U	U	U	U	U

Appendix H
Summary of Positive Detections in Onsite Field Screening
Groundwater Analytical Results, Groundwater Evaluation, Phase II,
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Identifier	FDEPGCTL		FEDMCL	RBC for Tap Water		17Q02705	17Q02803	17Q02803	17Q02804	17Q02805	17Q02806	17Q02901	17Q02902	17Q03001	17Q03002	17Q03101	17Q03102	17Q03103
Sampling Date						4/9/98	4/8/98	4/8/98	4/8/98	4/8/98	4/8/98	4/9/98	4/9/98	4/9/98	4/9/98	4/9/98	4/9/98	4/9/98
Depth bls (ft)						49-50	29-30	29-30	39-40	49-50	59-60	16-20	26-30	6-10	16-20	9-10	19-20	29-30
Volatile Organics, ug/L																		
1,1-Dichloroethene	7	p/c	7	0 044		U	U	U	1.1	U	U	U	U	U	1.8	U	US	U
Benzene	1	p/c	5	0 36	c	U	U	U	U	U	U	U	U	U	U	U	U	U
cis-1,2-Dichloroethene	70	p/st	70	61	n	22 E	1 8	2 2	32 E	11	0.7	U	U	6.0	39 E	U	US	U
Ethylbenzene	30	s/st	700	1,300	n	U	U	U	U	U	U	U	U	U	U	U	U	U
m/p-Xylene	20	s/st	10,000	1,400	n	U	U	U	U	U	U	U	U	U	U	U	U	U
o-Xylene	20	s/st	10,000	1,400	n	U	U	U	U	U	U	U	U	U	U	U	U	U
Tetrachloroethene	3	p/c	5	1 1	c	U	U	U	U	U	U	U	U	U	1.1	U	US	U
Toluene	40	s/st	1,000	750	n	U	U	U	U	U	U	U	U	U	U	U	U	U
trans-1,2-Dichloroethene	100	p/st	100	120	n	U	U	U	0.5	U	U	U	U	U	12	U	U	U
Trichloroethene	3	p/c	5	1 6	c	U	U	U	6.3	3.0	0.8	U	U	U	[illegible]	U	US	U
Vinyl Chloride	1	p/c	2	0 019	c	U	2.0	1.8	100 E	10	U	U	U	0.5	[illegible]	U	US	U

Appendix H
Summary of Positive Detections in Onsite Field Screening
Groundwater Analytical Results, Groundwater Evaluation, Phase II,
Study Area 17

Naval Training Center, Orlando
Orlando, FL

Identifier	FDEPGCTL		FEDMCL		RBC for Tap Water		17Q03104	17Q03105	17Q03106	OR0800	OR0810
Sampling Date							4/9/98	4/9/98	4/9/98	3/21/98	3/23/98
Depth bls (ft)							39-40	49-50	59-60	---	---
Volatile Organics, ug/L											
1,1-Dichloroethene	7	p/c	7		0.044		U	U	U	U	U
Benzene	1	p/c	5		0.36	c	U	U	U	U	U
cis-1,2-Dichloroethene	70	p/st	70		61	n	U	U	U	3.2	U
Ethylbenzene	30	s/st	700		1,300	n	U	U	U	U	U
m/p-Xylene	20	s/st	10,000		1,400	n	U	U	U	U	U
o-Xylene	20	s/st	10,000		1,400	n	U	U	U	U	U
Tetrachloroethene	3	p/c	5		1.1	c	U	U	U	U	U
Toluene	40	s/st	1,000		750	n	U	U	U	U	U
trans-1,2-Dichloroethene	100	p/st	100		120	n	U	U	U	U	U
Trichloroethene	3	p/c	5		1.6	c	1.2	U	U	U	U
Vinyl Chloride	1	p/c	2		0.019	c	U	U	U	U	U

Appendix H
Summary of Positive Detections in Onsite Field Screening
Groundwater Analytical Results, Groundwater Evaluation, Phase II,
Study Area 17

Naval Training Center, Orlando
Orlando, FL

NOTES:

Groundwater background screening value is twice the average of detected concentrations for inorganic analytes.
FDEPGCTL = Florida Department of Environmental Protection, Groundwater Cleanup Target Levels, Chapter 62-785 FAC, April 30, 1998.
FEDMCL = Federal Maximum Contaminant Levels, Primary Drinking Water Regulations and Health Advisories, February 1996.
RBC = Risk-Based Concentration Table, USEPA Region III, May 1996, R.L. Smith. RBC for chromium is based on chromium VI. RBC for lead is not available, value is treatment technology action limit for lead in drinking water distribution system identified in Drinking Water Standards and Health Advisories (USEPA, 1995).
For essential nutrients (calcium, magnesium, potassium, and sodium) screening values were derived based on recommended daily allowances.

s = secondary groundwater standard.
st = systemic toxicant.
mc = based on minimum criteria
p = primary standard.
o = organoleptic.
n = noncarcinogenic effects.
c = carcinogen (GCTLs) or carcinogenic effects (RBCs).
USEPA = U.S. Environmental Protection Agency.
J = Reported concentration is an estimated quantity.
E = Concentration exceeds the highest calibration standard.
U = Undetected
S = Percent recovery exceeds criteria.
μg/L = micrograms per liter.
mg/L = miligrams per liter.
Bold/shaded numbers indicate exceedance of groundwater guidance.

APPENDIX I

GROUNDWATER FLOW CHARACTERIZATION TABLES
(MONITORING WELL CONSTRUCTION DETAIL, WATER-LEVEL ELEVATION DATA, HYDRAULIC POTENTIAL DATA, SLUG-TEST RESULTS)

Table I-1
Monitoring Well Construction Details

Base Realignment and Closure
Environmental Site Screening Report
Study Area 17
Naval Training Center
Orlando, Florida

Well ID[1]	Date Installed	Borehole Depth (feet bls)	Well Depth (feet bls)	Screen Interval (feet bls)	Filter Pack Interval (feet bls)	Seal Interval (feet bls)	Grout Interval (feet bls)	Casing Depth (feet bls)
Initial Screening:								
OLD-17-01A	5/15/95	14.0	12.5	2 to 12	1 to 14	0.5 to 1	0 to 0.5	NA
OLD-17-02A	5/15/95	14.0	12.5	2 to 12	1 to 14	0.5 to 1	0 to 0.5	NA
OLD-17-03A	5/16/95	14.0	12.5	2 to 12	1 to 14	0.5 to 1	0 to 0.5	NA
OLD-17-04A	5/16/95	14.0	12.5	2 to 12	1 to 14	0.5 to 1	0 to 0.5	NA
OLD-17-05A	5/15/95	14.0	12.5	2 to 12	1 to 14	0.5 to 1	0 to 0.5	NA
OLD-17-24T[2]	6/2/95	5.0	5.0	5.0	NA	NA	NA	NA
Supplemental Screening (Phase I):								
OLD-17-06A[3]	1/23/97	11.0	11.0	2 to 11	1 to 11	0.5 to 1	0 to 0.5	NA
OLD-17-07A[3]	1/23/97	11.0	11.0	2 to 11	1 to 11	0.5 to 1	0 to 0.5	NA
OLD-17-08A[3]	1/23/97	11.0	11.0	2 to 11	1 to 11	0.5 to 1	0 to 0.5	NA
OLD-17-09A[3]	1/23/97	11.0	11.0	2 to 11	1 to 11	0.5 to 1	0 to 0.5	NA
OLD-17-10C	2/5/97	47.5	47.0	42 to 47	40 to 47.5	38 to 40	0 to 40	NA
Supplemental Screening (Phase II):								
OLD-17-11B	4/28/98	20.5	20.0	15 to 20	13 to 20.5	10 to 13	0 to 10	NA
OLD-17-12C	4/28/98	50.5	50.0	45 to 50	43 to 50.5	40 to 43	0 to 40	NA
OLD-17-13B	4/28/98	20.5	20.0	15 to 20	13 to 20.5	10 to 13	0 to 10	NA
OLD-17-14C	4/29/99	48.5	48.0	43 to 48	41 to 48.5	38 to 41	0 to 38	NA
OLD-17-15A	4/29/98	12.5	12.0	2 to 12	1 to 12.5	0.5 to 1	0 to 0.5	NA
OLD-17-16B	4/29/98	20.5	20.0	15 to 20	13 to 20.5	10 to 13	0 to 10	NA
OLD-17-17C	4/30/98	48.5	48.0	43 to 48	41 to 48.5	38 to 48.5	0 to 38	NA
OLD-17-18A	4/30/98	12.5	12.0	2 to 12	1 to 12.5	0.5 to 1	0 to 0.5	NA
OLD-17-19B	5/1/98	30.5	30	25 to 30	23 to 30.5	20 to 23	0 to 20	NA
OLD-17-20C	5/4/98	52.5	52.0	47 to 52	45 to 52.5	42 to 45	0 to 42	NA
OLD-17-21B	5/5/98	20.5	20.0	15 to 20	13 to 20.5	10 to 13	0 to 10	NA
OLD-17-22C	5/5/98	48.5	48.0	43 to 48	41 to 48.5	38 to 41	0 to 38	NA
OLD-17-23A	5/5/98	12.5	12.0	2 to 12	1 to 12.5	0.5 to 1	0 to 0.5	NA
OLD-17-24B	5/5/98	25.5	25.0	20 to 25	18 to 25.5	15 to 18	0 to 15	NA
OLD-17-25C	5/7/98	63.5	63.0	58 to 63	56 to 63.5	53 to 56	0 to 53	0 to 50

See notes at end of table.

Table I-1 (Continued)
Monitoring Well Construction Details

Base Realignment and Closure
Environmental Site Screening Report
Study Area 17
Naval Training Center
Orlando, Florida

Well ID[1]	Date Installed	Borehole Depth (feet bls)	Well Depth (feet bls)	Screen Interval (feet bls)	Filter Pack Interval (feet bls)	Seal Interval (feet bls)	Grout Interval (feet bls)	Casing Depth (feet bls)
Supplemental Screening (Phase II) (continued):								
OLD-17-26A	5/5/98	12.5	12.0	2 to 12	1 to 12.5	0.5 to 1	0 to 0.5	NA
OLD-17-27B	5/5/98	20.5	20.0	15 to 20	13 to 20.5	10 to 13	0 to 10	NA
OLD-17-28C	5/7/98	63.5	63	58 to 63	56 to 63.5	53 to 56	0 to 53	0 to 50

[1] A, B, and C suffixes denote shallow, intermediate, and deep wells, respectively.
[2] Denotes a temporary monitoring well, installed with stainless steel hand auger.
[3] Denotes a microwell, installed by direct-push methods.

Notes: All permanent monitoring wells (excluding microwells) constructed with 2-inch-diameter polyvinyl chloride (PVC) riser and screen (0.010-inch slot), and installed in a 6.5-inch-diameter borehole. Temporary monitoring well constructed with 2-inch-diameter PVC riser and screen (0.010-inch slot), and installed in a 3-inch-diameter borehole. Microwells constructed with 1-inch-diameter PVC riser and screen (0.010-inch slot), and installed in 2-inch-diameter borehole.

ID = identification.
bls = below land surface.
NA = not applicable (no water level collected).

Table I-2
Water-Level Elevation Survey

Base Realignment and Closure
Environmental Site Screening Report
Study Area 17
Naval Training Center
Orlando, Florida

Location	Measuring Point Elevation[1] (feet msl)	Well Depth (feet bls)	Elevation of Screened Interval (feet msl)	Depth to Water (feet btoc)		Water Elevation (feet msl)	
				7/14/98	8/12/98	7/14/98	8/12/98
OLD-17-01A	90.3	12.5	78.3 to 88.3	NA	NA	NA	NA
OLD-17-02A	90.1	12.5	78.1 to 88.1	3.9	2.6	86.2	87.6
OLD-17-03A	89.5	12.5	77.5 to 87.5	3.8	2.9	85.7	86.6
OLD-17-04A	89.1	12.5	77.1 to 87.1	3.2	2.3	85.9	86.8
OLD-17-05A	89.0	12.5	77.0 to 87.0	2.9	2.0	86.1	87.0
OLD-17-06A[2]	89.8	11.0	78.8 to 87.8	NA	NA	NA	NA
OLD-17-07A[2]	89.4	11.0	78.4 to 87.4	NA	NA	NA	NA
OLD-17-08A[2]	89.7	11.0	78.7 to 87.7	NA	NA	NA	NA
OLD-17-09A[2]	89.0	11.0	78.0 to 87.0	NA	NA	NA	NA
OLD-17-10C	89.2	47.0	42.2 to 47.2	3.9	2.3	85.3	86.9
OLD-17-11B	89.8	20.0	69.8 to 74.8	3.6	2.4	86.2	87.4
OLD-17-12C	89.7	50.0	39.7 to 44.7	4.4	2.7	85.3	86.9
OLD-17-13B	90.0	20.0	70.0 to 75.0	4.0	3.2	86.0	86.8
OLD-17-14C	89.9	48.0	41.9 to 46.9	5.3	3.2	84.6	86.6
OLD-17-15A	88.9	12.0	76.9 to 86.9	2.8	2.2	86.1	86.7
OLD-17-16B	88.7	20.0	68.7 to 73.7	2.9	2.2	85.8	86.5
OLD-17-17C	88.6	48.0	40.6 to 45.6	4.2	2.2	84.4	86.4
OLD-17-18A	91.1	12.0	79.1 to 89.1	4.3	3.1	86.8	88.0
OLD-17-19B	91.5	30.0	61.5 to 66.5	6.4	4.3	85.1	87.1
OLD-17-20C	91.5	52.0	39.5 to 44.5	7.0	4.9	84.5	86.6
OLD-17-21B	90.5	20.0	70.5 to 75.5	4.1	2.8	86.4	87.7
OLD-17-22C	90.5	48.0	42.5 to 47.5	5.4	3.4	85.1	87.1
OLD-17-23A	90.3	12.0	78.3 to 88.3	3.6	2.7	86.7	87.6
OLD-17-24B	90.4	25.0	65.4 to 69.4	4.2	2.9	86.2	87.5
OLD-17-25C	90.3	63.0	27.3 to 32.3	33.4	34.4	56.9	55.9
OLD-17-26A	90.0	12.0	78.0 to 88.0	3.1	3.4	86.9	87.6
OLD-17-27B	90.0	20.0	70.0 to 75.0	3.4	2.6	86.6	87.4
OLD-17-28C	90.0	63.0	27.0 to 32.0	32.1	30.1	57.9	59.8
OLD-17-29A[3]	89.4	6.0	83.4 to 84.4	3.3	2.7	86.1	86.7
OLD-17-30A[3]	89.4	6.0	83.4 to 84.4	3.4	2.8	86.0	86.6
OLD-17-31A[3]	89.6	6.0	83.6 to 84.5	3.7	3.2	85.9	86.4

See notes at end of table.

Table I-2 (Continued)
Water-Level Elevation Survey

Base Realignment and Closure
Environmental Site Screening Report
Study Area 17
Naval Training Center
Orlando, Florida

Location	Measuring Point Elevation[1] (feet msl)	Well Depth (feet bls)	Elevation of Screened Interval (feet msl)	Depth to Water (feet btoc)		Water Elevation (feet msl)	
				7/14/98	8/12/98	7/14/98	8/12/98
OLD-17-32A[3]	89.7	6.0	83.7 to 84.7	3.7	3.3	86.0	86.4
OLD-17-33A[3]	89.5	6.0	83.5 to 84.5	3.6	3.1	85.9	86.4
17PZ01A[4]	90.1	14.0	76.1 to 86.1	4.8	3.5	85.8	86.6
17PZ02C[4]	90.0	46.0	44.0 to 49.0	5.4	3.7	84.6	86.1
17PZ03A[4]	89.5	14.0	75.5 to 85.5	4.0	3.4	85.5	86.1
17PZ04C[4]	89.5	46.0	43.5 to 48.5	4.9	3.2	84.6	86.3
17PZ05A[4]	89.4	14.0	75.4 to 85.4	3.9	3.3	85.5	86.1
17PZ06C[4]	89.1	46.0	43.1 to 48.1	4.4	2.7	84.7	86.4
17SG01[5]	87.5	NA	NA	2.4	2.2	85.1	85.3

[1] Measuring points refers to top-of casing at monitoring wells and drive points, and to top of gauge at staff gauge.
[2] Microwell.
[3] Drive point installed into base of drainage ditch located along south side of study area.
[4] Piezometer.
[5] Staff gauge installed in drainage ditch located along south side of study area.

Notes: msl = above mean sea level (U.S. Geological Survey, North American Datum, 1927).
bmp = below measuring point.
btoc = below top of casing.
NA = not applicable (no water level collected).

Table I-3
Hydraulic Potential Survey Results

Base Realignment and Closure
Environmental Site Screening Report
Study Area 17
Naval Training Center
Orlando, Florida

Location	Water-Level Elevation (feet msl)		Elevation of Mid-Point of Well Screen (feet msl)	Head Potential Measurements (feet)			
				July 14, 1998		August 12, 1998	
	July 14, 1998	August 12, 1998		Vertical Gradient[1] (ft/ft)	Direction of Hydraulic Potential	Vertical Gradient[1] (ft/ft)	Direction of Hydraulic Potential
Monitoring Wells[2]							
OLD-17-02A	86.2	87.6	NA	NA			
OLD-17-21B	86.4	87.7	73.0	0.02	Upward	0.01	Upward
OLD-17-22C	85.1	87.1	45.0	0.05	Downward	0.02	Downward
OLD-17-03A	85.7	86.6	NA	NA			
OLD-17-13B	86.0	86.8	72.5	0.02	Upward	0.01	Upward
OLD-17-14C	84.6	86.6	44.4	0.05	Downward	0.01	Downward
OLD-17-04A	85.9	86.8	82.1	NA			
OLD-17-10C	85.3	86 9	44.7	0.02	Downward	0.003	Upward
OLD-17-05A	86.1	87.0	NA	NA			
OLD-17-11B	86.2	87.4	72.3	0.01	Upward	0.03	Upward
OLD-17-12C	85.3	86.9	42.3	0.03	Downward	0.02	Downward
OLD-17-15A	86.10	86.7	NA	NA			
OLD-17-16B	85.8	86.5	71.2	0.02	Downward	0.01	Downward
OLD-17-17C	84.4	86.4	43.1	0.03	Downward	0.004	Downward
OLD-17-18A	86.8	88.0	NA	NA			
OLD-17-19B	85.1	87.1	63.0	0.03	Downward	0.04	Downward
OLD-17-20C	84.5	86.6	42.0	0.03	Downward	0.02	Downward
OLD-17-23A	86.7	87.6	NA	NA			
OID-17-24B	86.2	87.5	67.9	0.03	Downward	0.01	Downward
OLD-17-25C[3]	56.9	55.9	29.8	0.77	Downward	0.83	Downward
OLD-17-26A	86.9	87.6	NA	NA			
OLD-17-27B	86.6	87.4	72.5	0.02	Downward	0.01	Downward
OLD-17-28C[3]	57.9	59.8	29.5	0.67	Downward	0.64	Downward

See notes at end of table.

Table I-3 (Continued)
Hydraulic Potential Survey Results

Base Realignment and Closure
Environmental Site Screening Report
Study Area 17
Naval Training Center
Orlando, Florida

Location	Water-Level Elevation (feet msl)		Elevation of MidPoint of Well Screen (ft-msl)	Head Potential Measurements (feet)			
				July 14, 1998		August 12, 1998	
	July 14, 1998	August 12, 1998		Vertical Gradient[1] (ft/ft)	Direction of Hydraulic Potential	Vertical Gradient[1] (ft/ft)	Direction of Hydraulic Potential
Piezometers[4]							
OLD-17-PZ1A	85.3	86.6	NA	NA			
OLD-17-PZ2C	84.6	86.1	46.5	0.02	Downward	0.01	Downward
OLD-17-PZ3A	85.5	86.1	NA	NA			
OLD-17-PZ4C	84.6	86.3	46.0	0.02	Downward	0.01	Downward
OLD-17-PZ5A	85.5	86.1	NA	NA			
OLD-17-PZ6C	84.7	86.4	45.6	0.02	Downward	0.01	Upward
Staff Gauge and Drive Points							
OLD-17-SG1[5] (Staff Gauge)	85.1	85.3	NA				
OLD-17-29A[6]	86.1	86.7	83.9	0.83	Upward	1.0	Upward
OLD-17-30A[6]	86.0	86.6	83.9	0.75	Upward	0.93	Upward
OLD-17-31A[6]	85.9	86.4	84.1	0.80	Upward	0.85	Upward
OLD-17-32A[6]	86.0	86.4	84.2	1.0	Upward	0.82	Upward
OLD-17-33A[6]	85.9	86.4	84.0	0.73	Upward	0.69	Upward

[1] Calculated by dividing the difference between the elevation of the water level in each monitoring well by the elevation of the mid-point of the respective well screens.
[2] Monitoring wells situated in clusters: wells with "A" designation are screened at water table surface; wells with "B" designation are screened at intermediate depths of aquifer; and wells with "C" designation are screened at the bottom of the aquifer.
[3] Monitoring well screen situated below shallowest clay seam within the Hawthorn Group.
[4] Piezometer installed on south side of canal to measure groundwater elevation.
[5] Staff gauge installed in drain canal to measure elevation canal surface water level.
[6] Drive point installed into base of drainage canal to measure elevation of groundwater beneath canal.

Notes: msl = mean sea level.
ft/ft = feet per foot.
NA = not available.

Table I-4
Hydraulic Conductivity Testing Results

Base Realignment and Closure
Environmental Site Screening Report
Study Area 17
Naval Training Center
Orlando, Florida

Monitoring Well Identifier	Geologic Unit	Hydraulic Conductivity[1] ft/min	ft/day	cm/sec	Groundwater Flow Rate[2] (ft/yr)
Shallow Wells:					
OLD-17-02A	fine sand	1×10^{-3}	1.4	5×10^{-4}	
OLD-17-05A	fine sand	2×10^{-3}	2.8	1×10^{-3}	
OLD-17-15A	silty sand	4×10^{-4}	0.6	2×10^{-4}	
OLD-17-18A	silty sand	2×10^{-4}	0.3	1×10^{-4}	
Geometric Mean:		1.1×10^{-3}	1.5	6×10^{-4}	7.3
Intermediate Wells:					
OLD-17-11B	silty sand	2×10^{-4}	0.3	1×10^{-4}	
OLD-17-16B	silty sand	4×10^{-4}	0.6	2×10^{-4}	
OLD-17-19B	silty sand	3×10^{-4}	0.4	2×10^{-4}	
OLD-13-21B	silty sand	3×10^{-4}	0.4	2×10^{-4}	
Geometric Mean:		3×10^{-4}	0.5	2×10^{-4}	1.8
Deep Wells:					
OLD-17-12C	silty sand	6×10^{-4}	0.9	3×10^{-4}	
OLD-17-17C	silty sand	2×10^{-3}	2.9	1×10^{-3}	
OLD-17-20C	silty sand	3×10^{-3}	4.3	2×10^{-3}	
OLD-17-22C	silty sand	4×10^{-4}	0.6	2×10^{-4}	
Geometric Mean:		1×10^{-3}	2.5	2×10^{-3}	6.1

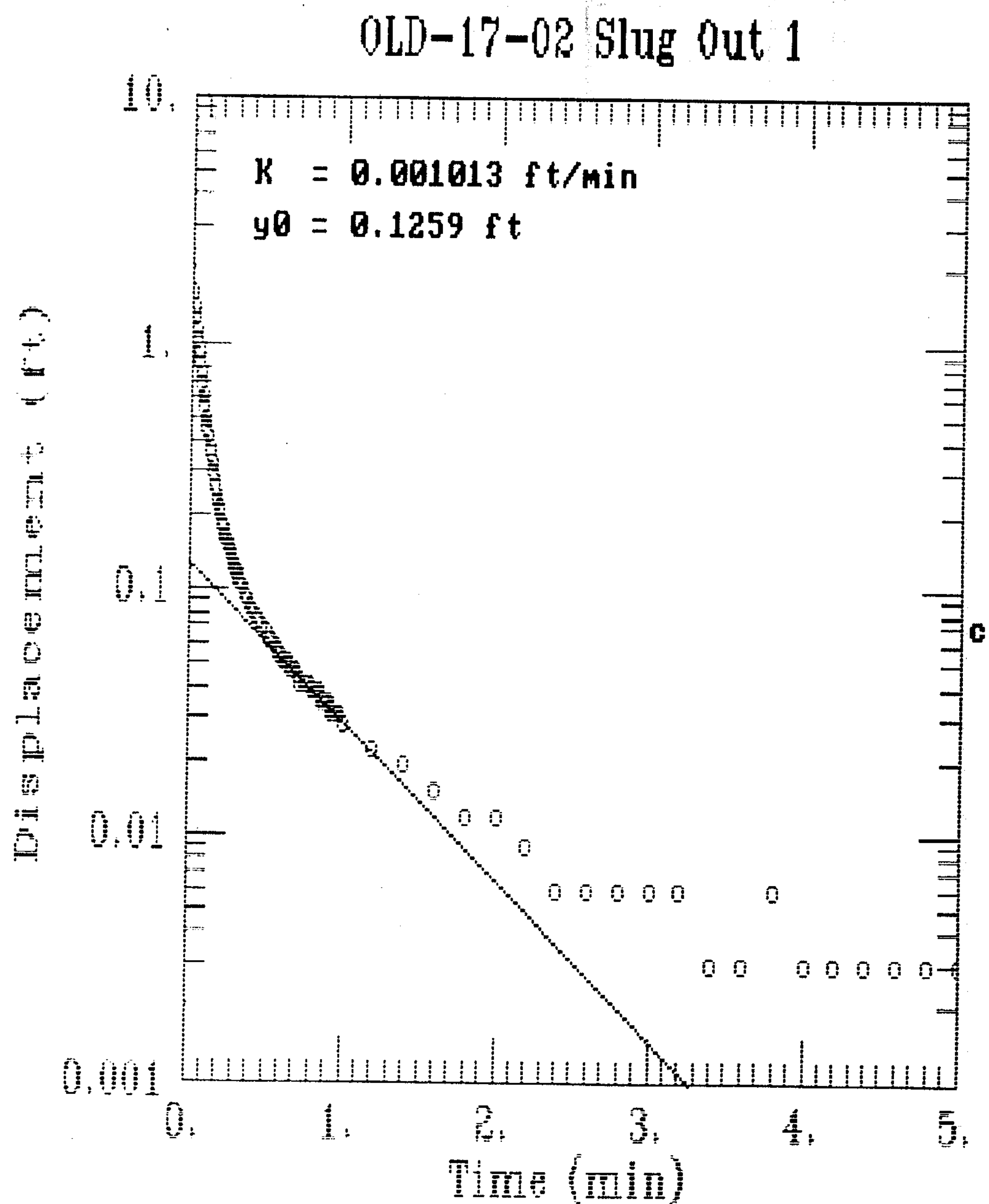
[1] Both rising head (slug-in) and falling head (slug-out) test were performed at each intermediate and deep monitoring well. Hydraulic conductivity shown above was calculated by averaging the two test values. Only falling head tests were performed at the shallow wells.

[2] Groundwater flow rate calculated using the following formula: $V = Ki/p$, where K = the hydraulic conductivity; i = the average gradient; p = an assumed porosity value of .30 (unitless). The hydraulic gradient for the shallow, intermediate, and deep intervals of the surficial aquifer measured at 0.004 ft/ft, 0.003 ft/ft, and 0.002 ft/ft, respectively

Notes: ft/min = feet per minute.
ft/day = feet per day.
cm/sec = centimeters per second.
ft/yr = feet per year.
ft/ft = feet per foot.

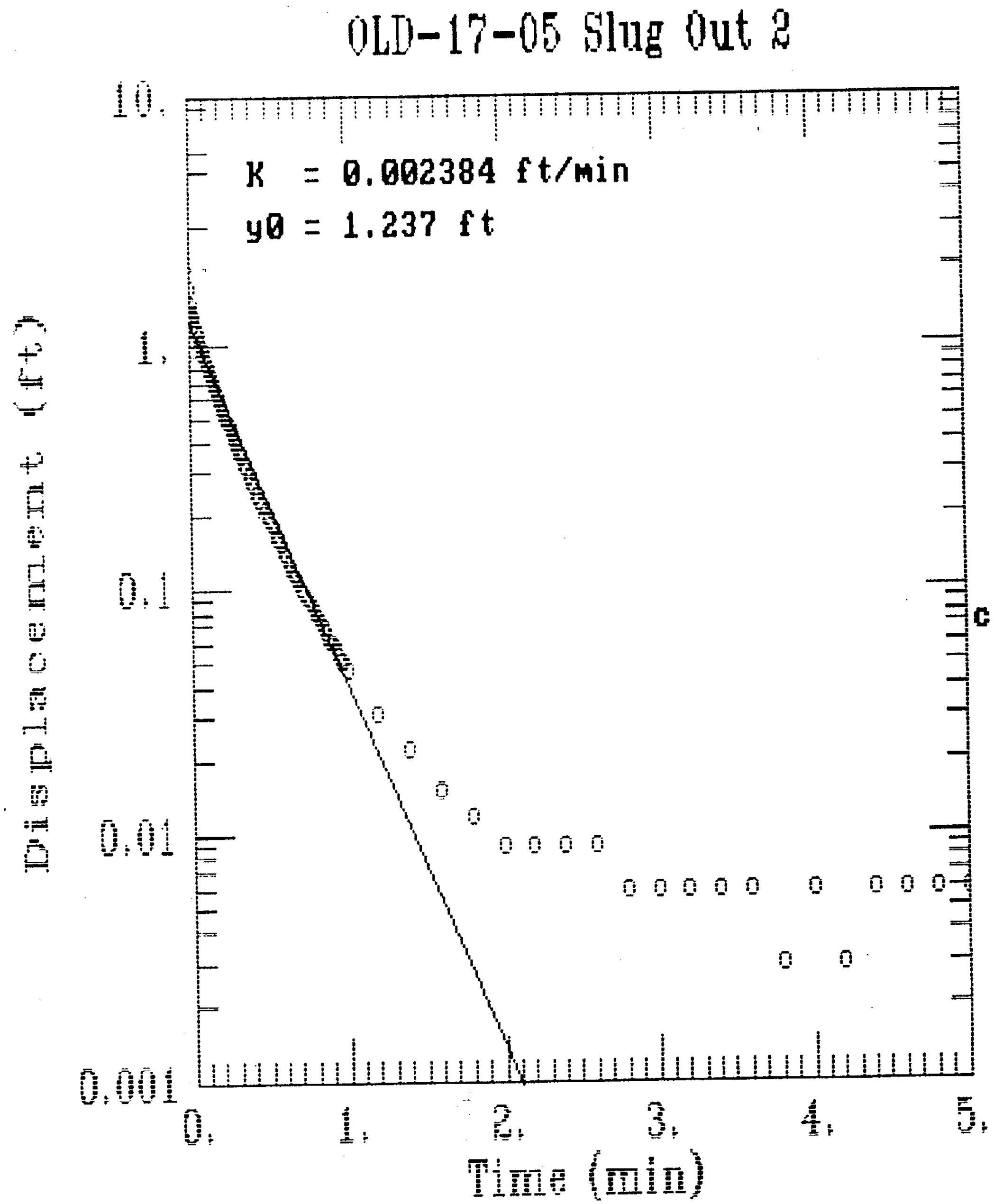
APPENDIX J

SLUG-TESTING SEMILOG PLOTS


OLD-17-02 Slug Out 1
K = 0.001013 ft/min
y0 = 0.1259 ft
Displacement (ft)
10.
1.
0.1
0.01
0.001
0.
1.
2.
3.
4.
5.
Time (min)

c:

at

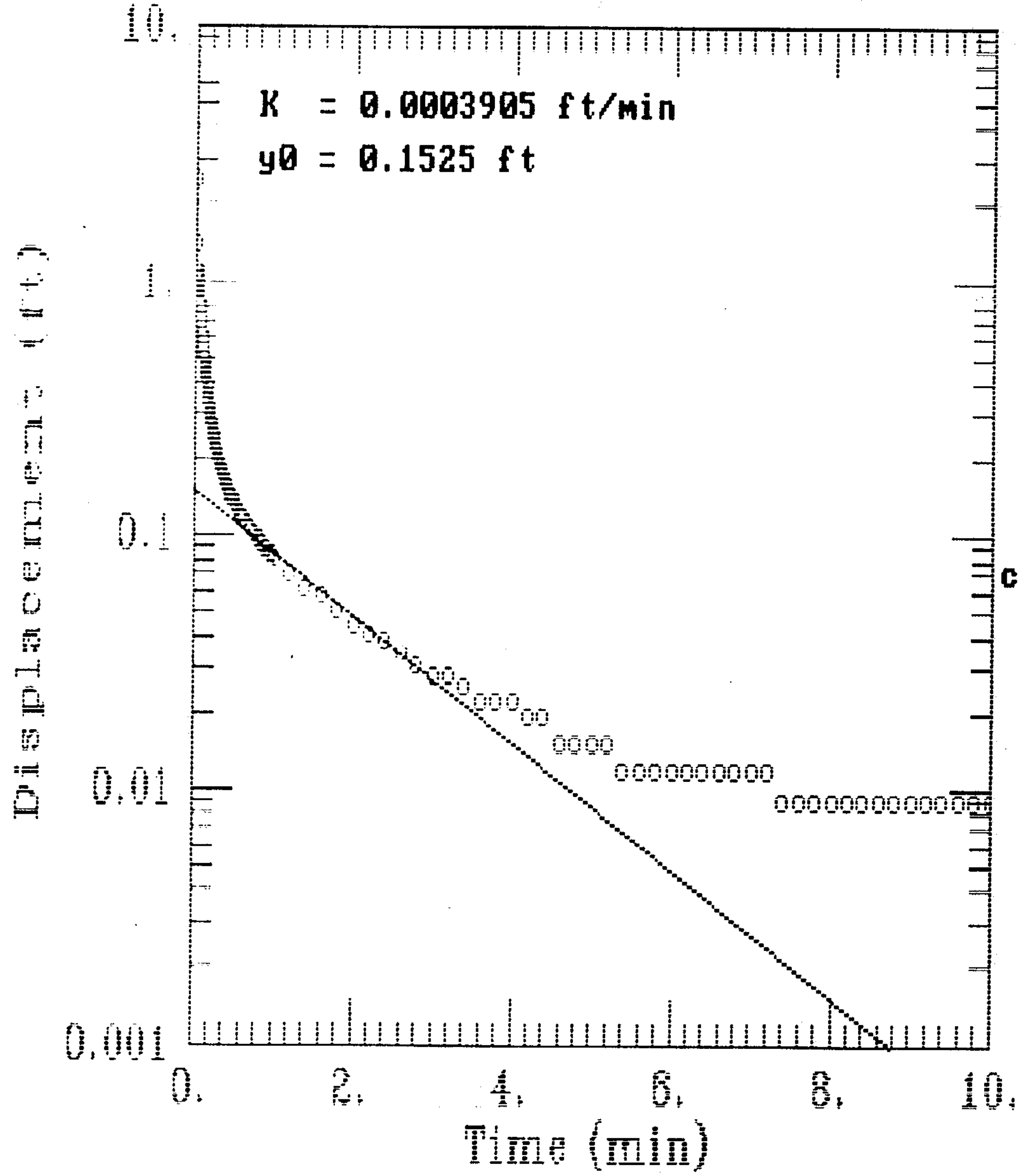


OLD-17-05 Slug Out 2
K = 0.002384 ft/min
y0 = 1.237 ft
Displacement (ft)
Time (min)
10.
1.
0.1
0.01
0.001
0.
1.
2.
3.
4.
5.

c:

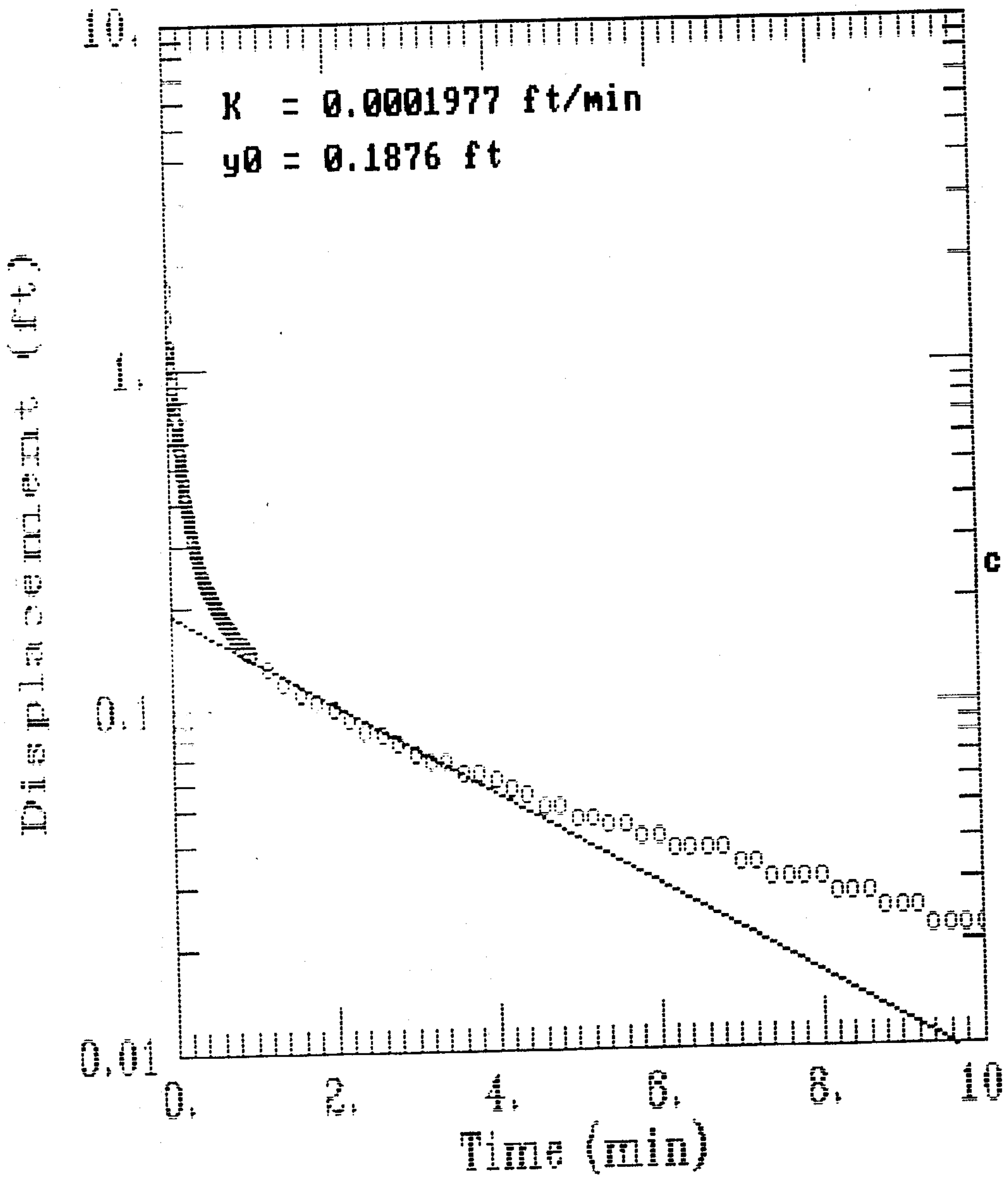
at

OLD-17-15 Slug Out 2



c: at

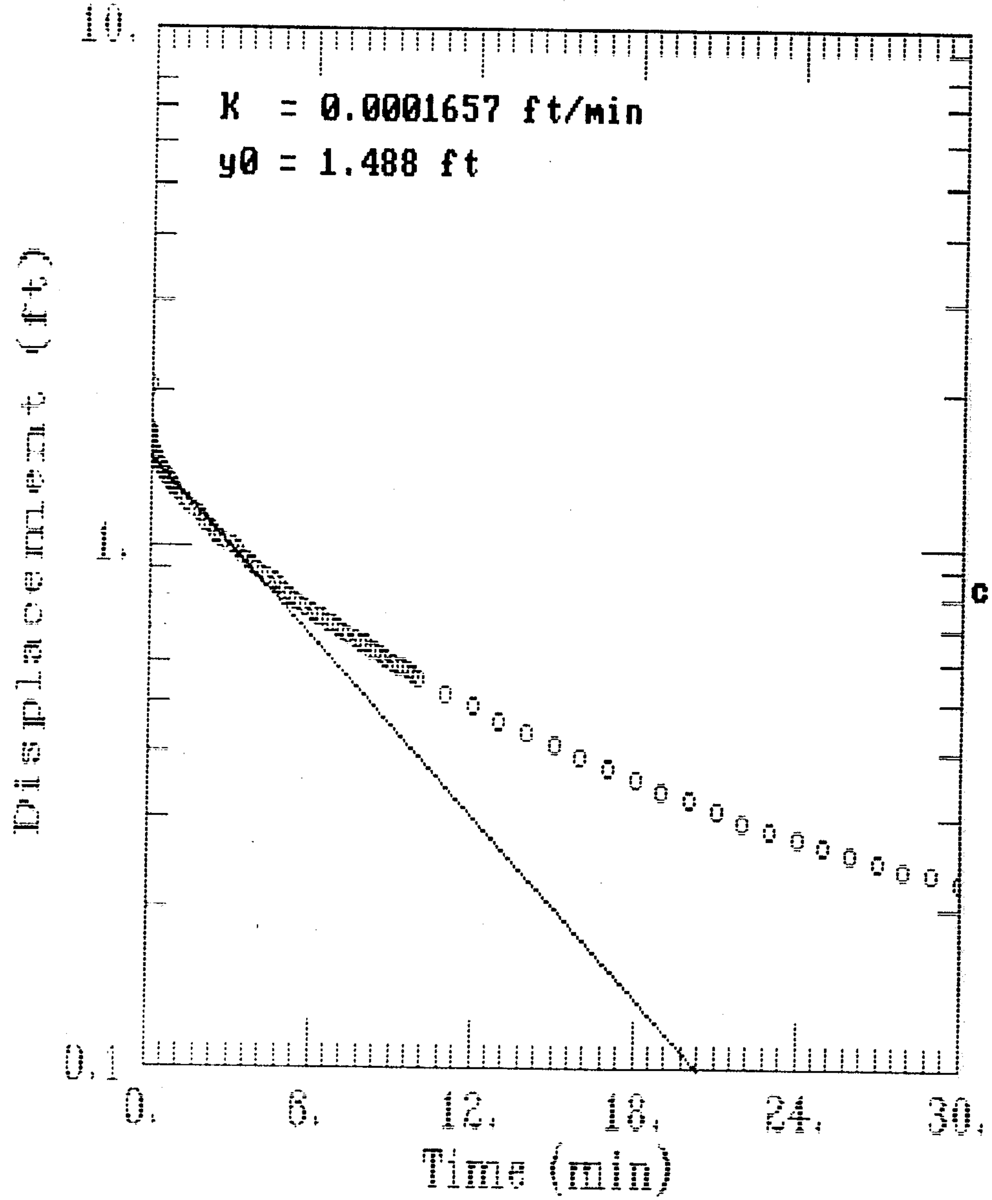
OLD-17-18 Slug Out 2



c:

at

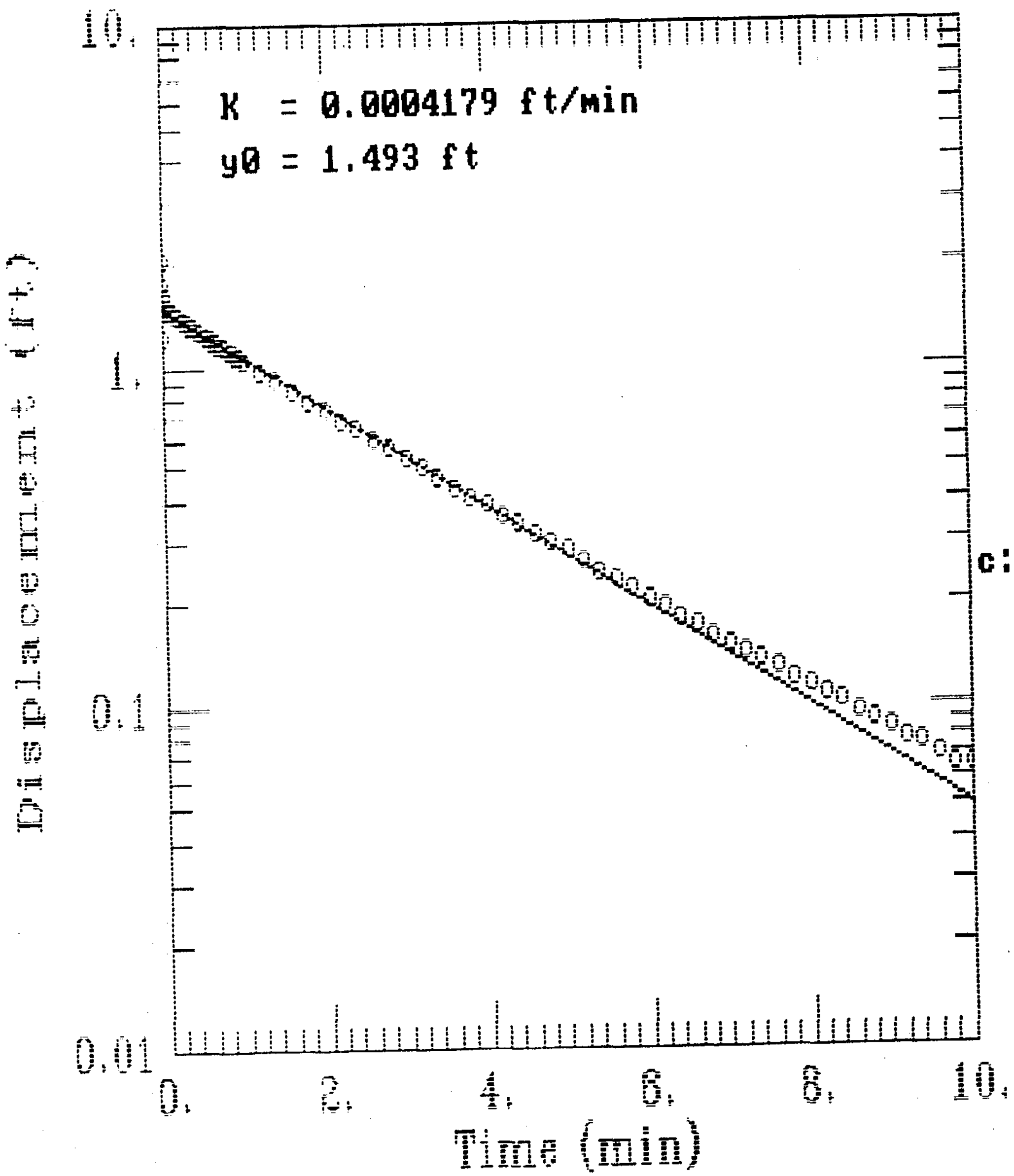
OLD-17-11 Slug Out 1



c:

at

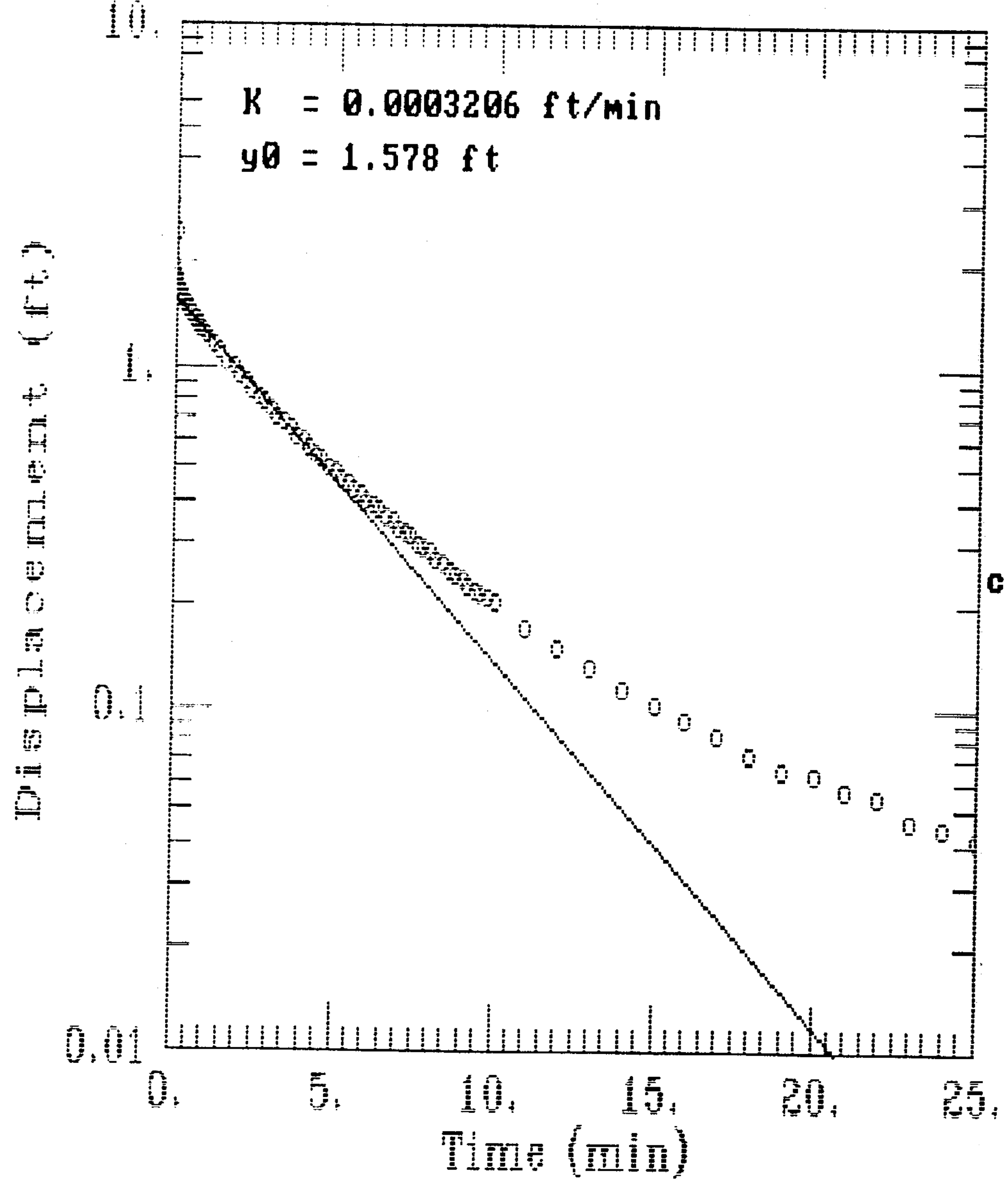
OLD-17-16 Slug Out 1



c:

at

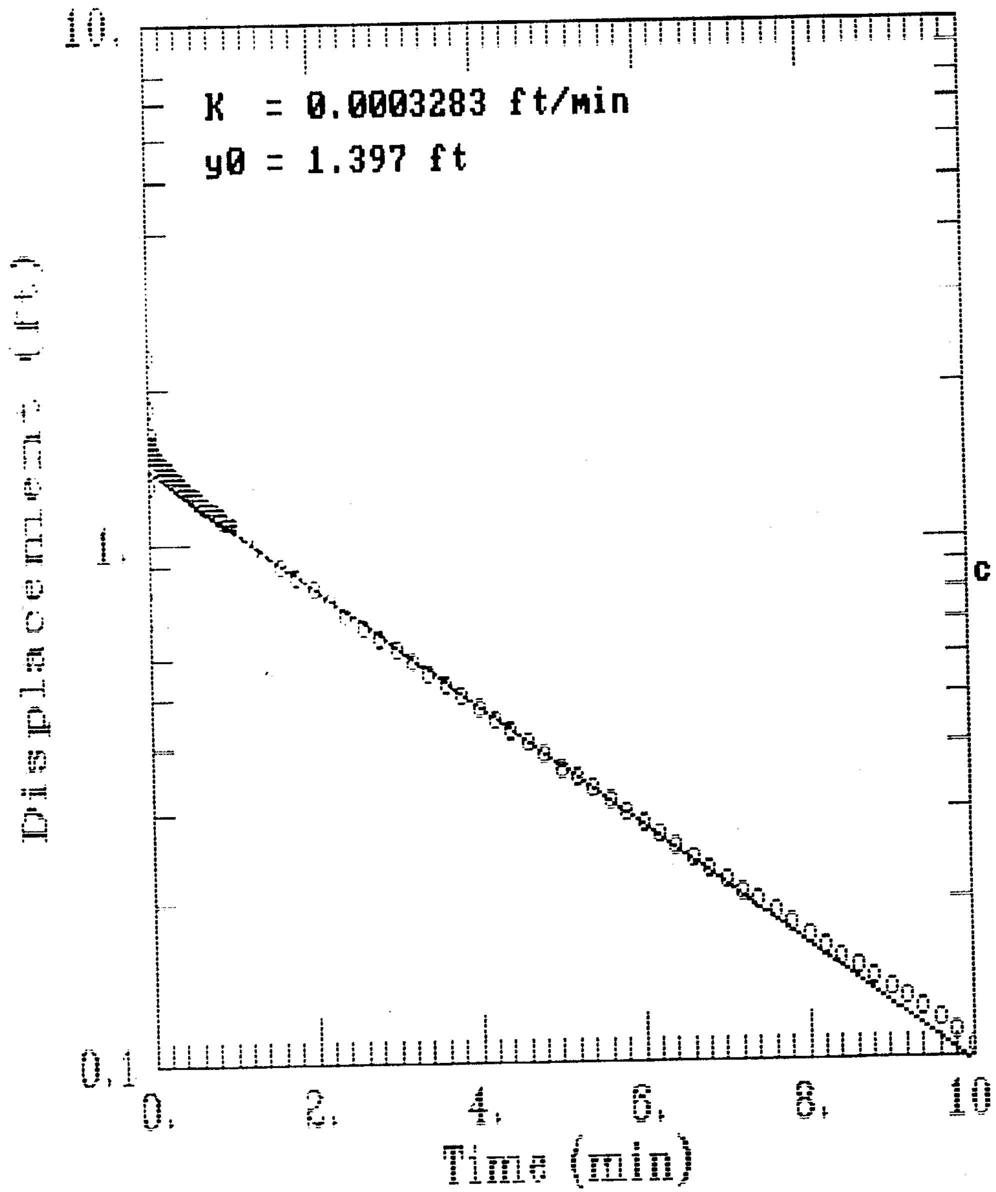
OLD-17-19 Slug Out



c:

at

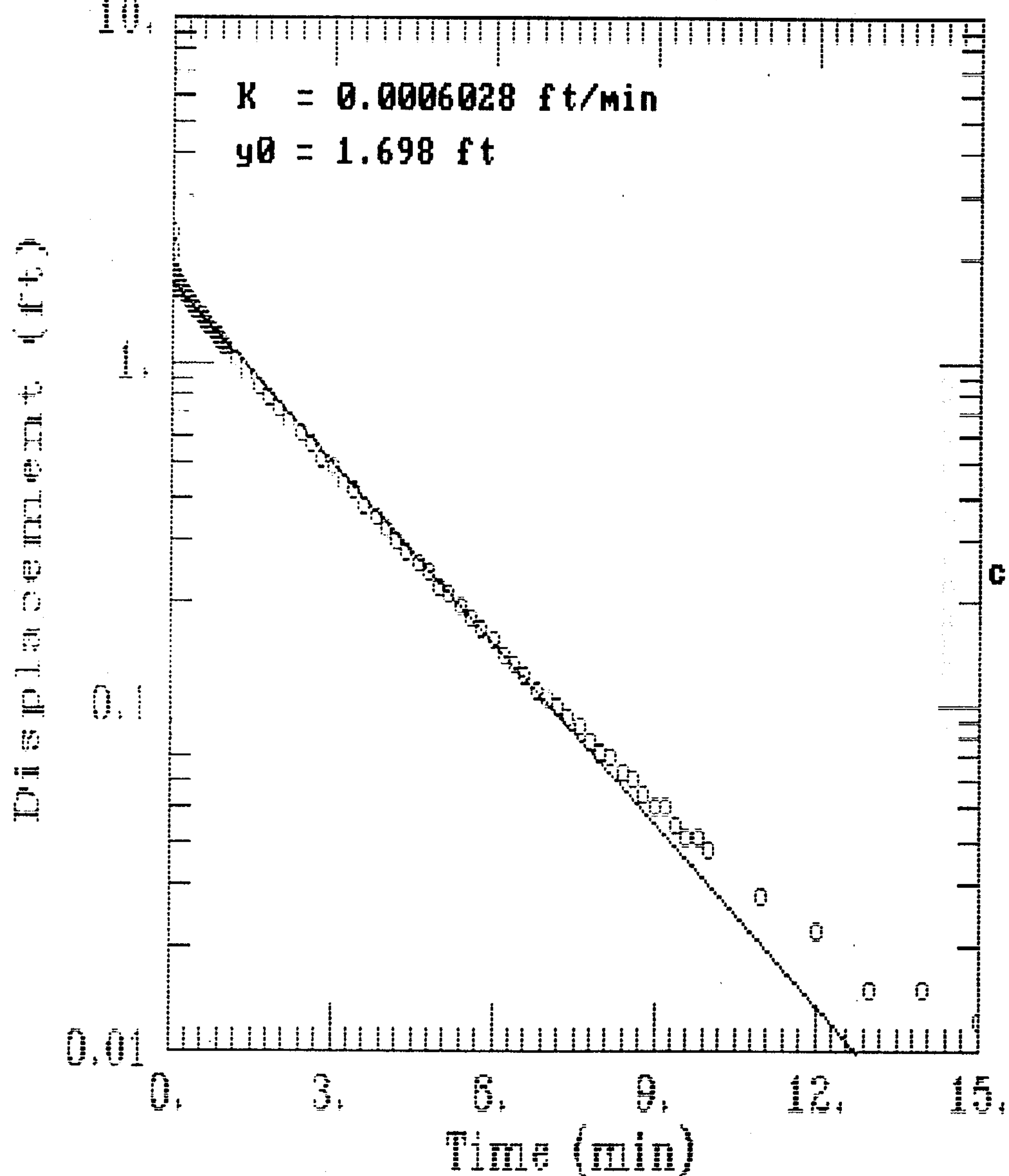
OLD-17-21 Slug Out 2



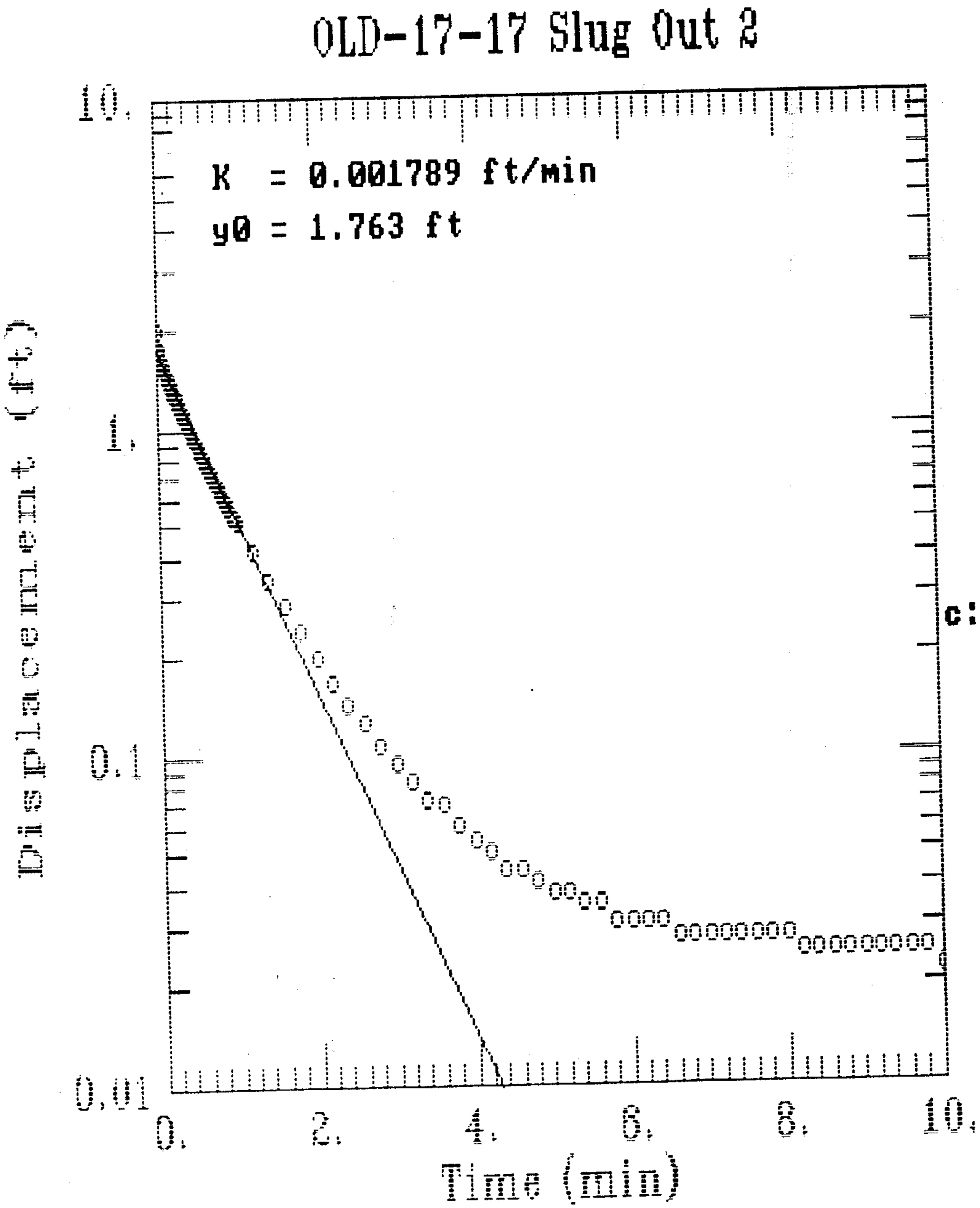
c:

at

OLD-17-12 Slug in



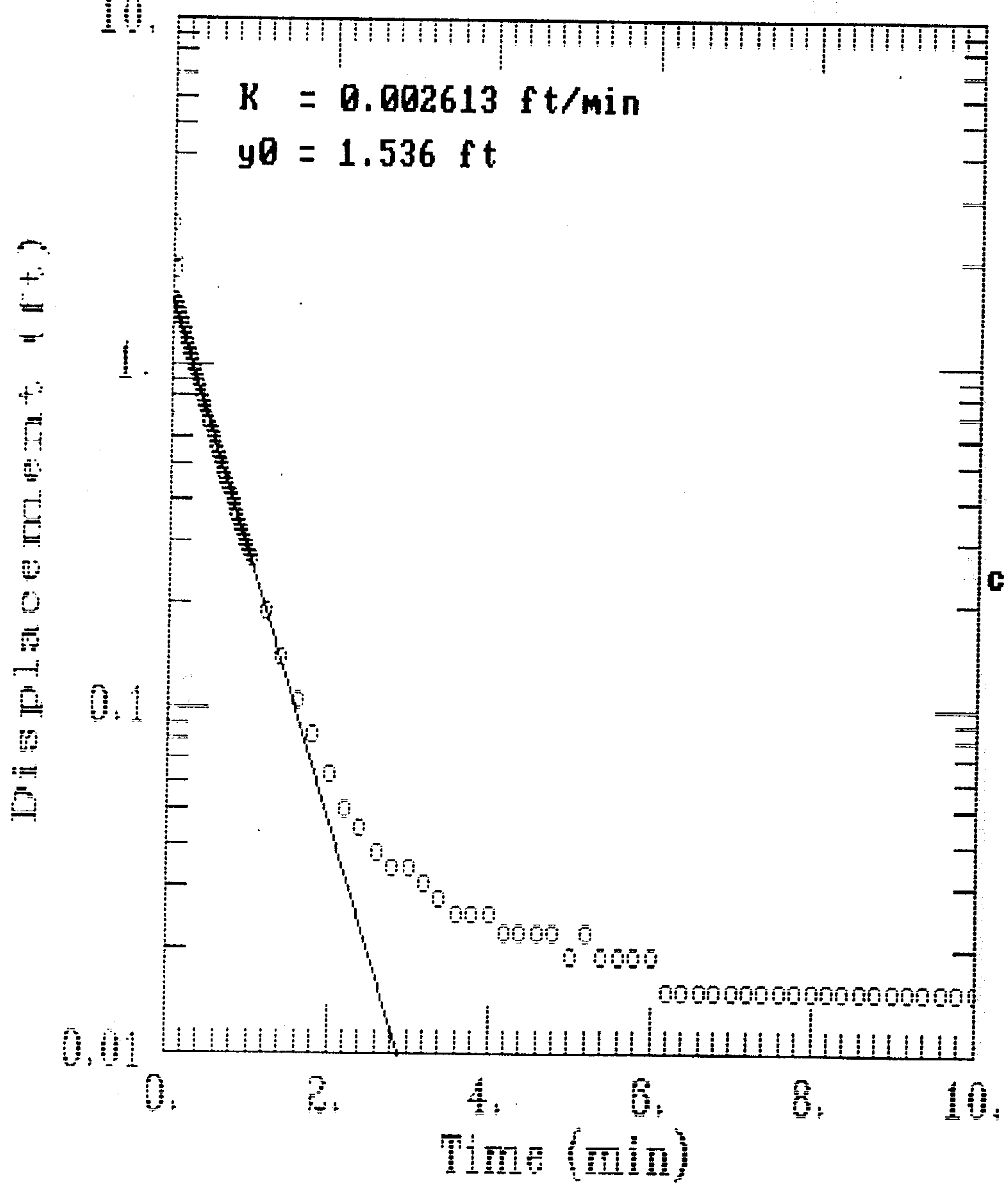
c: at


OLD-17-17 Slug Out 2
K = 0.001789 ft/min
y0 = 1.763 ft
10.
1.
0.1
0.01
Displacement (ft)
0.
2.
4.
6.
8.
10.
Time (min)

c:

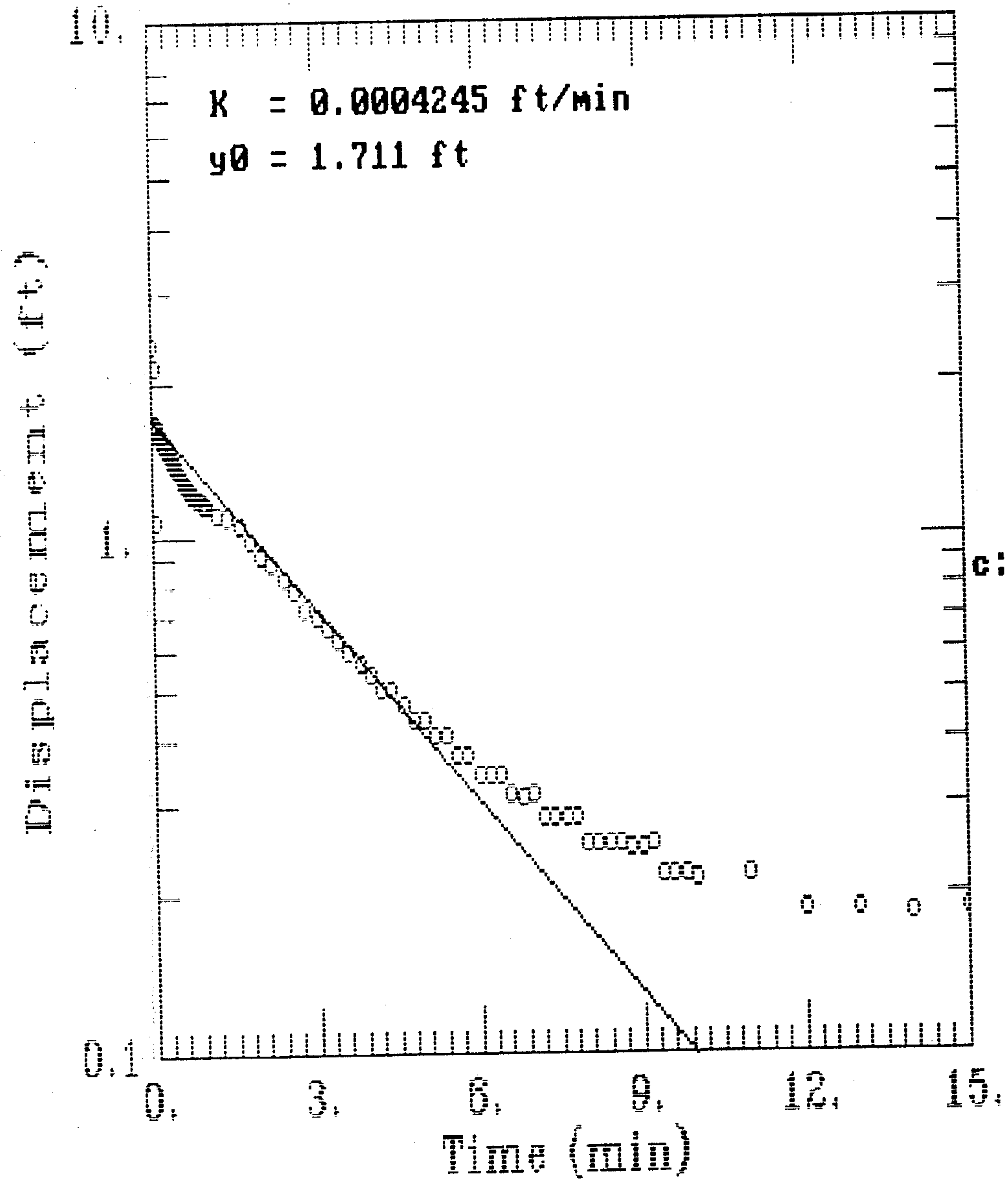
at

OLD-17-20 Slug In



c: at

OLD-17-22 Slug In 1



c:

at